Best Value Procurement
-

a case study on governance and (in)stability of specifications within a complex procurement project

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Summary

Reason and problem definition
Organizations are increasingly confronted with procurement questions for which no or insufficient knowledge is present within the organization. In such cases, the necessary knowledge must be retrieved from the market. If the procurement project is also capital intensive, has multiple stakeholders and is long term, the project is a complex procurement issue. In order to cope with complexity, organizations are looking for effective procurement methods, such as Performance Based Contracting (PBC). In the application of PBC, specifications (in terms of desired output) are recorded at the beginning of the procurement process and it is left to the supplier to realize that output. Following PBC, we can see the emergence of Best Value Procurement (BVP). This method was developed by Dean Kashiwagi in the mid-nineties. In the Netherlands, BVP is also known as ‘performance procurement’. BVP is also based on the idea of output control and a supplier who determines what the product or service will look like. Characteristic of BVP is that the client searches for a provider who is better than his respective competition. The supplier is given a lot of freedom to utilize his expertise, but also a lot of responsibilities for achieving results. The advantage for the procuring party is that all risks are borne by the supplier. However, it is not known or scientifically researched to what extent this particular distribution of risks leads to the desired results in practice.

Another aspect concerns the (in)stability of specifications. Within the BVP method, the specifications are also defined at the beginning of the process, but this occurs under the responsibility of the supplier. The service definitions are not altered in conformity with the BVP method, because the supplier directs the process. The question is whether this functions properly, because research appears to indicate that particularly in complex procurement projects, a constant dialogue between client and contractor is required to sharpen the specifications, in order to ensure that the client actually gets what he wants.

The question of the governance in buyer-supplier relationships has often been a research topic. In general, we can distinguish two vastly different governance methods: contractual and relational governance. Research indicates that only focusing on contract (output) does not lead to the desired results. This is opposite to the BVP philosophy where the contract is leading. Given the questions and problems described above, we have defined the problem for this study as follows:

How is the (in)stability of specifications and (contractual and relational) governance handled in practice in the application of the BVP method in complex procurement trajectories?

Research method
The problem definition is researched by means of a case study, as there is little knowledge of the research subject. The selected case is a sourcing trajectory at Water Authority Vechtstromen on a complex procurement project, namely the optimal utilization of biogas sewage treatment plant Emmen. A capital-intensive process with a lot of risks in the field of environment and safety which makes the procurement process complex. The procuring organization did not have sufficient in-house knowledge to come up with a solution to the problem and applied the BVP method. An extensive file has been kept of the procurement process which has been used and studied for the present case study. Three different parties were involved in the procurement process: the client (Water Authority Vechtstromen), the contractor (SH+E which was taken over by another party, Eliquo Energy & Water, halfway through the project), and the advisory engineering consultancy company Arcadis. Semi-structured interviews were conducted with officials directly involved in the procurement project of all parties.
Results
In this case, the service definitions of three out of the four phases of the BVP procurement method have been altered. Only in the evaluation phase have these not been altered. In the preparatory phase, concretization phase, and execution phase, the service definitions have been altered as a result of uncertainty regarding the service definitions and because not all risk were identified. There was a constant dialogue between the procuring organization and the contractor. Contrary to what the BVP method presumes, the contract between the procuring organization and the contractor was drawn up jointly.
It is notable that a maximum price was adjusted in this case, something that should not have happened according to the BVP philosophy. The procuring organization was confronted with calamities during the execution of the project and with additional wishes which have led to extra expenses because not all risks had been identified and because the constant dialogue between the parties led to new insights. Consequently, the service definitions were altered.
Another notable outcome was that the parties did not only guide the project by means of the contract. Calamities, additional wishes and requirements and progress meetings are discussed on the basis of relational norms. Decisions were made in consensus and both parties had a joint goal. This too is perpendicular to the BVP philosophy as the contract is leading in the BVP philosophy. Relational aspects such as trust, flexibility, solidarity, and dialogue must also be present to make a complex procurement project into a success.
We conclude that, in this case, the BVP method has not been strictly applied and probably would not have worked. Already for the fact that a constant dialogue between client and contractor appeared to be needed. The findings with regard to the relational and contractual governance phenomena and the (in)stability of service definitions are not in conformity with what the BVP philosophy posits. Furthermore, it is notable that BVP was viewed by the respondents as a good method to cope with complexity in this case.

Recommendations
It is recommended to investigate the BVP procurement method in cases which also display complexity, but that do not concern innovations. The dynamics are expected to be different in that case. This study concerns a unique case at a Water Authority. It is recommended to investigate this in other environments such as other Water Authorities or governments, such as municipalities, provinces, Rijkswaterstaat (Department of Waterways and Public Works) or the Rijksoverheid (Central Government). Additionally, the research object was a lower government, namely a Water Authority. It is recommended to research cases in the private sector where the procurement act does not apply and the client has more freedom to determine how a procurement procedure is performed.
The quality of the procurement process could be dependent upon the experience of an organization with procurement, the organizational structure, and experience with the BVP procurement method. The results of research conducted in other organizations could be dependent upon how the procurement process is organized. It is recommended to take the abovementioned aspects into account for other organizations as well as which results this yields if the procurement process is organized differently.
The present study is aimed at the BVP procurement method to cope with complexity. It is recommended to investigate how the phenomena manifest themselves in other procurement methods, such as the competition-oriented dialogue. Additionally, it can then be researched whether other procurement methods are also useful in coping with complexity.
1. Introduction

1.1 Problem Statement

Complex procurement projects are characterized by a high level of uncertainty and technological complexity, the involvement of a large number of factors, and a time span of multiple years (Olsen et al., 2005). The complexity makes it impossible to procure goods and services separately. In the literature, procurement processes are often described as a number of phases that must be taken consecutively (Gelderman and Albronda, 2007). Traditional tendering according to the procurement process is not possible in case of complex procurement projects (Caldwell et al., 2009). Moreover, procuring services generally requires a different approach than procuring goods (Axelsson and Wynstra, 2002). The last four decades, scientific literature has paid increasingly more attention to procurement of professional services (Axelsson and Wynstra, 2002; Selviaridis and Spring, 2010). Services differ from goods of four generic characteristics: intangibility, heterogeneity, co-occurrence with production and consumption, and the transience/impossibility to maintain inventory (Zeithaml et al., 1985).

An important difference of services compared to goods, is that services are produced and consumed simultaneously (Valk and Rozemeijer, 2009). This simultaneous character gives rise to constant interaction between the procuring organization and the service supplier. In the literature, composing service definitions is viewed as an activity that should have taken place during the first phase of the procurement process, the specification phase (Selviaridis et al., 2011; Ahlstrom and Nordin, 2006). We also see this in publications that recommend performance based contracting as the method for procuring complex procurement projects: the desired output is established at the beginning of the procurement process and it is left to the supplier to realize that output (Kim et al., 2007). Performance based contracting is regularly and increasingly often applied in practice (Hypko et al., 2010; Sumo et al., 2014). A literature study by Selviaridis and Wynstra (2015), appears to confirm this upward trend of performance based contracting.

In line with performance based contracting, we can see the emergence of Best Value Procurement. This method was developed in the mid-nineties by the American Dean Kashiwagi of the Performance Based Studies Research Group of the Arizona State University. In the Netherlands, Best Value Procurement is also known as ‘performance procurement’. BVP is also based on the idea of output-control. Additionally, the output of the service is fixed (Kashiwagi, 2011). According to Kashiwagi (2012), BVP is the procurement method in which the supplier is the expert and the procuring party is ignorant or possesses too little or no expertise to specify the services. Furthermore, Kashiwagi indicates that the procurer must not specify, because, in doing so, the procurement will negatively influence the quality of the services to be procured. The supplier determines what the product or service will look like. The advantage for the procuring party is that all risks are borne by the supplier. However, it is not known or scientifically researched to what extent this division of risks leads to the desired results in practice.

The supplier draws up the contract and control is exercised by means of the contract (contractual governance). BVP states, by covering risks it does not matter who the supplier is (Van de Rijt and Santema, 2009). Suppliers are selected on the basis of their expected performance, and preferably the best supplier, who can provide the most added value, is chosen. Best Value Procurement is therefore also viewed as the answer to failing procurement practices in which procurement occurred traditionally, at the lowest price and without a lot of confidence in the suppliers. Best Value Procurement means that the procurer must look for experts who will be given the responsibility to deliver performances and who are able to handle this responsibility. In a nutshell:
more freedom, but also more responsibility for suppliers. The client does provide control measures that minimize risks and increase the exchange of information (Rijt and Santema, 2009). For the client, it will be difficult not to interfere with the expertise and the work of the supplier. The client selects a high-performer, not by drafting detailed specifications, but rather by making the supplier accountable for the accompanying performances. BVP is particularly popular within the public sector, where procurers look for the best suppliers with whom a good contract is entered into. The question is whether that is justified.

Another point concerns the (in)stability of specifications. Within the BVP method, the specifications are also established at the beginning of the process, but now under the responsibility of the supplier. Procuring on the basis of BVP means that the tenderer sets the primary boundary conditions as requirements in his tender documents and additionally formulates the objective(s), which must be achieved through the work to be realized, the product to be delivered, or the service to be provided by the beneficiary enterprise. The core of BVP is that the procurer does not provide a worked-out detail specification, a few A4 pages are the starting point (Van de Rijt and Santema, 2009; www.nevi.nl/bvp). However, the result is that, once a supplier has been selected based on the decisions regarding the specifications, the specifications do not change after the specification phase has been completed. Only those aspects of the service definition needed to select a service provider will be included in the contract. Yet, procuring organizations are not always capable of drafting detailed and complete specifications (Ellram et al., 2008). Complex procurement projects require frequent interaction between the procuring and delivering organizations during the specification phase (Van der Valk and Rozemeijer, 2009). Recent studies have also shown that service specifications are often unstable (Selviaridis et al., 2011; Van der Valk and Rozemeijer, 2009), but also that stability is not necessarily desirable (Gelderman et al., 2015). The dialogue between buyer and supplier gives rise to dynamics in the service definitions. Dynamics in specifications during the entire procurement process could even contribute to the success of the tender process (Gelderman et al., 2015). Allowing the altering of service specifications could well increase the usability of the delivered services. It is unclear to what extent the BVP method leaves room for altering specifications and how the practice deals with the specifications, particularly in complex procurement projects.

We could ask ourselves how the BVP practice handles the risks and uncertainties connected to complex procurement projects. In the BVP method, output control is central. Eventually, performance is key, where the supplier is given a great responsibility. BVP is perpendicular to more traditional procurement approaches in which the procurement is performed with strict specifications and detailed systems to control supplier performance (Van de Rijt and Santema, 2009). The question of the governance in buyer-supplier relationships has often been studied. In general, we can distinguish between two opposite governance methods: contractual and relational governance (Caniëls et al., 2012; Zheng et al., 2008; Poppo and Zenger, 2002). Caniëls et al. (2012), Cao and Lumineau (2015) and Gelderman et al. (2015) have conducted research into the interaction of relational and contractual governance in a complex tender process. Their studies show that, in addition to contractual governance, relational governance and trust also appear to be important governance aspects. The more dynamic the service definitions, the more relational governance is needed. The BVP procurement method focuses on contractual governance and all risks are placed with the supplier. Relational governance assumes a shared set of norms and values between the parties (Wang et al., 2008). Important relational norms include flexibility, solidarity, and the exchange of information (Heide and John, 1992), as well as reciprocity, integrity, and conflict management (Ness and Haugland, 2005). BVP does not assume relational governance, but rather contractual governance. However, it is not known to what extent contractual governance functions properly in practice.
In practice we often see mixed forms of buyer-supplier relationships. Both governance mechanisms are used for the management of the procurement project. Relational and contractual governance can also interact, as research by Caniëls et al. (2012) and Cao and Lumineau (2015) shows. Particularly the interaction between the governance mechanisms is considered to be the key to a successful set-up and execution of complex procurement projects (Caniëls et al., 2012). In studies by Selviaridis et al. (2011) and Gelderman et al. (2015), the link was also made with the interaction between relational and contractual governance during the process of stabilization and destabilization of the service definitions. The question now is whether we could also observe such an interaction BVP procurement projects.

On the basis of the points and problems above, we have defined the problem for this study as follows:

*How is the (in)stability of specifications and (contractual and relational) governance handled in practice in the application of the BVP method in complex procurement trajectories?*

**1.2 Research Method**

In order to answer the research question, we have opted for a case study. According to Yin (2003), there are three factors that influence the choice of the research strategy:

1. The formulation of the question.
2. The extent of control a researcher has on the behavioral expression to be researched.
3. The level of focus on contemporary or historic phenomena.

Yin (2003) indicates that the choice for a case study offers advantages when the research question concerns a how or why question on contemporary events over which the researcher has little or no control. The problem is defined as a “how” question, a question that is exploratory in nature. According to Yin (2003, every research strategy can be used for “how” questions. In addition to an exploratory character, the problem definition is also descriptive in nature. The present study makes use of a case study investigation. First because there is relatively little research done on the factual application of BVP. Publications are often anecdotal. Secondly because case studies are preferred to answer “how” questions. In the present study we wish to create insight into the use of BVP in practice. How professionals handle questions regarding the (in)stability of specification and selection and the use of governance mechanisms in the application of the BVP method in practice. Thirdly, this study does not concern behavior that can be manipulated which automatically excludes the experimental research strategy. Given the fact that this study concerns current behavior, historic research is also not an option, making the case study the best choice of research strategy.

According to Ghauri (2004), a case study is a suitable tool if the research area is a relatively unknown phenomenon. Eisenhardt (1989) also says that case studies are especially suited for new research areas and new areas for which the existing theory is not yet adequately developed. Cao and Lumineau (2015) and Caniëls et al. (2012) have conducted research into contractual and relational governance, but the results cannot yet be generalized. This study conducts a case study into contractual and relational governance and the stabilization and destabilization of specifications in the application of the BVP procurement method. How are these phenomena handled during the BVP procurement process? A relatively unknown phenomenon, certainly in combination with the BVP procurement method.
In this study, we have opted for a single case study investigation. In order to perform a single case study, the study must be suitable for the application of a case study. Yin (2003, p.39-41) describes five conditions for the applicability of a single case study investigation. An important condition is that it concerns a unique case.

The present study is about a unique case. It concerns a specific sourcing process at Water Authority Vechtstromen. Water Authority Vechtstromen was the result of a merger between Water Authority Hunze en Aa and Water Authority Velt en Vecht. The merger took effect on January 1, 2015. The tasks of the Water Authority include: clean water, dry feet, and safe dykes. Water is purified at the water treatment plants. During the purification of water, the influent (waste water) is first thickened (dewatered) and subsequently fermented. During fermentation, gas is released which can be used for the production of energy. This does require CHP installations. A capital intensive process with a lot of risks in the field of environment and safety, which makes the procurement project process. Such a process was procurement at Water Authority Vechtstromen with the application of the BVP method. Given the complexity of the process, the procuring party opted for the BVP method for a number of reasons:

1. The procuring party wished to cover all risks.
2. The Water Authority was looking for a party that possessed the best knowledge and quality.
3. The Water Authority wished to obtain innovations from the market.

The data are collected by investigating the documentation of the case concerned, and by conducting semi-structured interviews with a number of key employees during the procurement process. Triangulation is achieved by approaching the case from various angles. Both the internal executive department, the procurement department, and the supplier are interviewed. The interview results are tested by means of the documentation investigation.
2. Literature Study

The problem definition yields the following variables, which form the basis on which the literature study is conducted.

1. Complex procurement trajectories
2. Standard procurement approaches
3. The BVP procurement method
4. The (in)stability of service specifications
5. Relational and Contractual governance

Variables 1 and 2 are descriptive in nature. From variables 3 to 5 propositions are formulated regarding the role of these variables in the BVP procurement process.

2.1 Complex Procurement Trajectories

Complex procurement trajectories are characterized by a high level of uncertainty, risks, and technical complexity. Additionally, there are a lot of parties involved in the procurement process and such processes have a time span of multiple years (Olsen et al., 2005). For a procuring party, complex procurement trajectories are not standard processes in which the desired components can simply be bought. Complex procurement trajectories require a different approach than traditional procurement methods do and are capital intensive (Caldwell, 2009). In complex procurement trajectories, it practically never concerns the procurement of pure goods but rather the provision of services and/or the combination of both (Caldwell, 2009; Olsen, 2005). The procuring party is looking for a service provider who can deliver a total concept in which goods and services are combined. Procuring organizations increasingly choose a total solution for a procurement issue. The procurement of services is more complex as services have a number of characteristics that make the procurement more complex. These characteristics are:

- **Intangibility.** Services are not concrete and tangible and that makes it difficult for a procuring organization to specific the services and to specify exactly which services are needed. Additionally, it is also difficult to ascertain, after the delivery or completion of the order, whether the service provider has met the obligations (Ellram et al., 2007; Elram et al., 2008). Services are most visible and tangible at the moment of delivery.

- **Simultaneity (in Elram Inseparability).** Production and consumption of the services occur simultaneously in constant interaction between the procuring organization and the service provider. Consequently, the definition of the services is subject to constant changes (Valk and Rozemeijer, 2009).

- **Heterogeneity.** The personal knowledge, skills, and behavior of the employees of the procuring organization and the service provider play an important role in the production of services. The efforts and characteristics of employees influence the quality of the delivered services. This makes it difficult to achieve consistent quality (Gummesson, 1978).

- **Perishability.** Finally, the durability of services is limited. The value of services for the procurement organization is time-, place- and person-restricted.

The procurement process in complex procurement trajectories requires constant interaction between the buyer and supplier (Valk and Rozemeijer, 2009).

The challenge for the management is to cover the characteristics of complex procurement trajectories and in doing so build in governance mechanisms that can cover those pitfalls (Williamson, 1985). The pitfalls procurement departments have to deal with are opportunism, uncertainty, and transaction expenses.
Despite the increased demand for solutions for complex procurement trajectories, research into the procuring of complex procurement trajectories is scarce (Ellram et al., 2007; Nordin and Agndal, 2008). At the same time, procurers state that buying a product-service-package is much more complex than the procurement of goods or ‘pure’ services and procurers claim that they are less competent in handling this complexity (Smeltzer and Ogden, 2002). The quality of the results in complex procurement trajectories is not only dependent upon the input of the service provider, but also of that of subcontractors and final users (Selviaridis and Norrman, 2014).

There is complexity when the results are uncertain, when there is technical complexity, when there are significant risks which are difficult to control for the procuring party, or when the procuring party does not possess the required knowledge, and when multiple parties are involved in the procurement process. Additionally, these are trajectories that concern a time span of multiple years. Not only the strategic and tactical components are important, but so is the phase of contract management because of the demand for total service provision of procuring organizations. Not only the delivery is a key issue but also the execution and management of the contract.

The present study uses the procurement of CHP installations at Water Authority Vechtstromen as its case. A complex trajectory as there are multiple parties involved, there is a high degree of uncertainty regarding the outcome of the results, it is capital intensive, and has a time span of multiple years. This case was also chosen because not only the procurement trajectory was important, but the phase of contract management as well. The entire tender trajectory must be overseen. The procuring organization requires a total solution for the procurement question. Not only the physical CHP installations, but also the service provision for installation, maintenance, and repair.

2.2 Standard Procurement Approach

A procurement decision is practically never an independent event. Various persons from various departments are involved, both within the procuring organization and the selling organization (Gelderman and Albronda, 2007).

The procurement process consists of a number of sequential phases and there are many varieties of the procurement process. The most often used process model is the procurement process by Van Weele (2005). This process has been presented in a flow diagram below:

![Diagram of the procurement process](Image)

**Figure 1 Procurement process Van Weele**

The phase of the pre-trajectory (1) is about need and available budgets for the procuring organization.

The specify, select, and contract phases (the tactical phase) are the phases in which the tender is drawn up, suppliers are selected and evaluated, and eventually the order is awarded and the contract is drawn up. The operational phase follows the tactical phase in which the execution of the contract and the contract management occur.

The table below presents which activities take place in the various phases of the procurement process according to Gelderman and Albronda (2007).
### Table 1 Activities procurement process per phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>Activity</th>
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| 1. Preliminary-stage | 1. Determining procurement need  
                         2. Determining the offer (for instance through value chain, product, and market analysis)  
                         3. Estimation and determination of the financial budget  
                         4. Choice of procurement procedure or tender procedure |
| 2. Specify          | In this phase, the needs of the organization and the requirements the product and/or service to be procured must meet are determined. Five groups of requirements can be distinguished:  
                         1. functional (functions and user objectives)  
                         2. technical (materials, weights, dimensions, etc.)  
                         3. logistical (availability, delivery times, etc.)  
                         4. quality (norms, tolerances, procedures)  
                         5. commercial (contract form, price conditions, method of payment, liability, warranty)  
                         In addition to the above requirements, increasingly more attention is paid to Corporate Social Responsibility. In addition to the environmental aspects, the social aspects have also gained more attention, particularly in the public sector. It falls outside the scope of the present study to elaborate on this further. |
| 3. Select           | The offer trajectory is central in this phase in which the following activities take place:  
                         1. Offer request  
                         2. Offer evaluation  
                         3. Negotiating  
                         4. Market research  
                         5. Choice of supplier |
                         2. Drawing up contract  
                         3. Taking out contract |
| 5. Order            | 1. Placing an order/Order for delivery  
                         2. Recording and managing order information, including key figures as order frequency and financial information. |
| 6. Monitor          | 1. Order monitoring (control of delivery conditions)  
                         2. Processing and paying invoices |
| 7. Evaluation       | 1. Managing additional work and budget overruns  
                         2. Handling claims and penalty clauses  
                         3. Vendor rating (evaluation of supplier) |

The flow chart and the activities regarding the procurement process above are standard activities taken during standard procurement processes. During the specification phase, the requirements for the potential suppliers are determined. It is established which procurement need has arisen and a preliminary description of the services to be procured is drawn up, etc. Additionally, the...
A procurement package is determined. The service and/or delivery to be procured may fall under IT< HRM, Financial, Facility, etc. Furthermore, it is established which competences a service supplier must have in order to deliver professional services. In a standard procurement trajectory, in the specification phase, the procuring organization details exactly which requirements the product, service, and selling organizations must meet. There is a clear distinction between the specification phase and the selection phase in traditional procurement trajectories. The implication is that a supplier is selected based on decisions from the specification phase and that the specifications will not be altered anymore (Gelderman et al., 2015). A procuring organization cannot always have the necessary in-house knowledge of a certain service and/or product. This can create noise, resulting in the growing risk of procuring inferior quality (Kleemann and Essig 2013; Selviaridis, 2011). Awarding at the lowest price in complex procurements can eventually be more expensive.

In order to achieve the desired output and minimize the risks, procuring organizations procure more based on result where the risks are borne by the service provider. A standard procurement approach in this way of procuring is the Performance Based Contracting (PBC). PBC originated in the aircraft industry and defense industry. Kleemann and Essig (2013) have conducted research into the improvement of procurement results in complex procurement trajectories. In their study, the Performance Based Contracting (PBC) is described as a procurement method which is guided by results and outcomes. The PBC trajectory does not describe how the goods must be delivered and which means the supplier must use (Kim et al., 2007). This implies a high level of flexibility and responsibility given to the supplier. The compensation the supplier receives for the delivered solution is dependent upon the delivered quality (Hypko et al., 2010; Kleemann and Essig, 2013). According to these researchers, a procuring organization is able to cope with the complexity better by applying PBC. Procuring organizations are increasingly looking for a total solution for procurement demands. Particularly in case of the combined procurement of services and goods. PBC can result in better product performance by making the supplier responsible for the outcome (Kim et al., 2010; Hypko et al., 2010). As described in section 2.1, the combination of the procurement of services and goods is complex and buyers indicate that they are less competent to specify and procurement such combinations. Combined procurement nearly always concerns a main supplier and sub-suppliers. PBC describes how these relationships can be managed. Information plays a critical role in PBC (Kleemann and Essig, 2013).

Van der Valk, Wynstra, and Sumo (2013) have also conducted research into PBC. Their study particularly focuses on the triangular relationship between procuring organization, supplier, and consumer. The question of how PBC can be applied in this triangle of procuring organization, supplier, and consumer is central. In this case, the supplier delivers directly to the consumer. In order to manage this system, information flows are important and a formal contract serves as the control mechanism.

PBC is a procurement method that aims for desired outcome and results. Quality is measured by supplier performance in the total result. Supplier is not evaluated on behavior (for instance in the quantities to be produced or number of hours). No p x q, but a total solution. Management and control is exercised via the contract and is formal in nature. This formal contract leaves little room for interpretation, adjustments, or room to cope with changing external circumstances (Hypko et al., 2010). Risks are borne by the supplier and the question can be asked whether risks are not charged by the supplier. Eventually this can lead to higher costs for the procuring organization.

2.3 The BVP Procurement Method

Following PBC, the method of BVP was developed. The founder of BVP is American Professor Dean Kashiwagi, who is connected to the Arizona State University. Best Value Procurement (BVP) is a
vision and method for procuring and tendering of which the main focus is not price, but the performance of market parties (Van de Rijt and Santema, 2009). It is a different view on procuring and tendering than that which is usually applied. This paradigm shift has led to the procuring organization focusing on procuring the highest value and subsequently obtaining this at the lowest price (or at least a price fitting in the budget). Although BVP is a new procurement method, it does build on procuring and tendering according to the MEAT principle (Most Economically Advantageous Tender). The BVP approach is stooled on the conviction that risks are minimized or eliminated when information is effectively used. In other words: the more information is available and the better this information is utilized, the better the future can be predicted and the fewer decisions have to be made. The larger the processing capacity of people and organizations (read: the more information is utilized), the better the future can be predicted. This theory is called the Information Measurement Theory (IMT) (Kashiwagi, 2012).

Sharing information and risks
The theory by Kashiwagi (2011, 2012) concerns information and risks. Both matters are essential to the procurement process. After all, an organization must select a contractor who will best realize its project. In order to predict this, it is first crucial to know as much as possible about the offering party and to use this information in the selection process. Secondly, the contractor will have to be a market party who is best able to utilize the information on the project. He or she is the expert and should, better than anyone, be capable of using this information to signal and control risks and to successfully complete the project. Making good use of all available information also means that the distance between reality and expectations is minimized. Expectations of clients often arise because information is not properly used: personal ideas, experiences, ambitions, and a lack of knowledge and experience fill this void, giving rise to expectations (Van de Rijt and Santema, 2009). It is up to the contractor (the expert) to correct these expectations and align them with reality. The most important task of clients is to recognize and select experts. BVP is based on taking responsibility, dominant information, and measuring performance. This leads to more transparency. BVP does not have a different distribution of risks between the client and the contractor (the distribution of risks is dependent upon the chosen contract form). It is the case, however, that, due to the emphasis on proactive behavior from the contractor, all risks can be identified in advance which makes them controllable.

Role client and contractor in BVP
BVP is aimed at procuring the highest value for the lowest price. To achieve this, it is crucial that clients review their position with regard to contractors and align this with the following principles:

- It is the task of the clients to find experts (contractors) who can perform the order. This demands that the clients:
  - Take stock of their needs and expectations and communicate these to contractors
  - Monitor on the basis of information that is actually available and make decisions by minimizing own interpretations
  - Identify the Best Value provider, acknowledge him/her as expert, and facilitate him/her in the execution

- It is the task of the contractor to perform the order as an expert. This demands that the contractors:
  - Are proactive
  - Minimize and control risks
  - Define the difference between expectations of the client and reality
Contractor becomes owner of the problem
The current practice is often different. Clients consider themselves to be the owners of the problem (Van de Rijt and Santema, 2009). They try to cover themselves by drawing up minimum norms and detailed specifications contractors must meet. As a result, competition exclusively occurs on price, due to which contractors can only conform to the established minimum requirements ('for this low price, we do not do more than the minimum norm'). In this way, clients incite good contractors to negatively adjust the quality of their service provision. After all, they are ‘punished’ in the ‘final score’ if they deliver more quality, as that will also increase the price (Kashiwagi, 2011; Van de Rijt and Santema, 2009). For the same reason, innovations are not desirable either. These are not specified and are punished in the awarding. Clients must learn to aim for objectives and to assess whether the contractor is able to realize these objectives and is able to manage the process with his quality systems. The table below presents the differences between traditional standard procurement approaches and the BVP method.

Table 2 Differences

<table>
<thead>
<tr>
<th>Traditional (lowest price)</th>
<th>BVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client is the expert and makes too many decisions</td>
<td>Contractor is the expert and makes sure the client makes as few decisions as possible</td>
</tr>
<tr>
<td>A lot of communication</td>
<td>As little communication as possible</td>
</tr>
<tr>
<td>Using a lot of details</td>
<td>Using dominant information</td>
</tr>
<tr>
<td>Moving risks</td>
<td>Controlling risks</td>
</tr>
<tr>
<td>Thinking from I</td>
<td>Thinking from we (win-win)</td>
</tr>
<tr>
<td>Management, inspection and control</td>
<td>Listening, observing and streamlining</td>
</tr>
</tbody>
</table>

The BVP process consists of four phases presented below in a flow chart.

Figure 2 BVP procurement process 1

Preparation phase
In the preparation phase, the client must be trained in the methodology and learn how to recognize the expert, and the project objectives are formulated. Additionally, a strategic framework is established, a planning is made, weighing factors for evaluation are chosen, and a core document is drawn up with the project scope and the maximum price. The core document serves as information for the providers who wish to bid on the tender.
**Evaluation phase**

After the preparation phase, the evaluation phase starts. The goal of the client is to find the provider with the best combination of price and quality. The emphasis lies very strongly on quality. Price, therefore, forms a relatively small factor in the evaluation. The risk dossier, the opportunities dossier, the performance substantiation, and the interviews are more important. Here, the provider shows:

- How the provider approaches the projects.
- Which client risks the provider observes and how the provider handles these; the tenderer is asked to minimize the impact of these risks, without taking over the risks.
- The opportunities the provider sees and how the provider utilizes these.
- That the key figures properly understand the project.

When evaluating all documents, dominant information plays an important role: hard information that leaves no room for uncertainty.

Subsequently, the key functionaries of the tenderers are interviewed. The goal of these interviews is to verify whether the tenderer can realize his plan in the execution phase with the people he employs. The interviews are the most important of all awarding criteria. After the intended contractor has been selected on the basis of the awarding criteria, the so-called pre-award phase or concretization phase follows.

**Concretization phase**

In the concretization phase, the intended contractor elaborates on his plan in further detail. A detailed planning is drawn up and the risks and control measures are further developed. It is important to know that there is no negotiation in this phase or any adjustment of the original offer: it is about the further clarification and concretization of the offer. Furthermore, the contractor shows how the promised results are made measurable during the execution. This is perhaps the most important phase, as this creates the basis for the management of risks and utilizing opportunities during execution. A great advantage: the Action Plan is finished before the execution starts. In this way, the Best Value approach ensures that as little disruptions in execution arise. Should this phase prove that the intended contractor does not meet the requirements, this phase can be gone through again with the expert who has submitted the second best tender. If the concretization phase has been completed satisfactory, the awarding of the contract and the execution of it follow.

**Execution phase**

In the execution phase, the contractor has a complete overview of the project because everything has been thought out and talked through in the previous phases. In this phase, the performance of the contractor and the client is measured.

- There is a detailed planning.
- The risks and the opportunities that limit those risks have been clearly defined.
- The definition of the contractor’s offer is clear and sharp.
- The contractor has signaled a number of opportunities and explored ways of utilizing these.
- Performance indicators have been established to measure the performances of both the contractor and the client.
Weekly report
On the basis of the dominant and transparent information in the Weekly Report (weeklies), the contractor can adjust, if needed, in order to improve his performances. Moreover, the responsibilities of both the contractor and the client are clear.

BVP is a procurement method in which, contrary to standard procurement approaches (lowest price, MEAT, etc.), no detailed description of specifications is drawn up by the procuring organization. According to Kashiwagi, BVP presumes that this method is a perfect alternative to cope with complex procurement questions (Kashiwagi, 2010; Van de Rijt and Santema, 2009). Guidance and control have been formally stipulated in contracts in which every party involved known which responsibility is borne by whom. In the case of the research case, a BVP trajectory was chosen. The reasons for the procuring party to apply BVP are:

1. The project has been marked as complex by the procuring organization.
2. In the opinion of the procuring organization, there was not enough in-house knowledge to draw up the specifications.
3. There were a number of risks present that the procuring organization did not know how to minimize. Additionally, not all risks were visualized.
4. The procuring organization wished to procure a total solution and not just the ‘pure goods’. In addition to the installation, the total package consists of the installation and maintenance of the CHP installations.

Flows of information play an important role in this trajectory. Not only between the contractor and client, but also within the societal context in which the trajectory operates provide the necessary flows of information that could influence the entire project. Given the above story, the following propositions have been formulated:

P1: In the application of the BVP procurement method, all risks are identified due to which the client will not be confronted with calamities in unforeseen situations during the execution of the order.

In the BVP procurement method, all risks are placed with the contractor. This can lead to the contractor marking down risks which may increase the costs for the procuring organization.

P2: In the application of the BVP procurement method, a maximum price is determined by the client. The maximum price is not adjusted upward during the BVP procedure.

In the BVP procurement method, the contractor is the expert and the client must leave the responsibility to the contractor. The client prescribes as little as possible with regard to specifications and mainly looks at the objectives that have been formulated. The contractor must reduce the difference between the expectations of the client and reality. For this purpose, the contractor submits an Action Plan that is not deviated from, but is only concretized further.

P3: In the concretization phase of the BVP procurement method, the original offer of the contractor is not altered anymore.

P1, P2, and P3 are also formulated within the framework of the (in)stability of the service definitions. According to the BVP procurement method, the specifications do not alter because the supplier is the expert.
2.4 The (In)stability of Specifications

During the specification phase, traditional standard procurement procedures specify which requirements the product and/or service must meet. Furthermore, requirements are drawn up which the supplier must meet. However, when the dialogue is entered into with the supplier, specifications may alter during the procurement process as a result of the interaction between supplier and buyer (Selviaridis et al., 2011; Selviaridis & Spring, 2010; Gelderman et al., 2015). Upon the start of the procurement process, the specifications are stable and the interaction creates instability. This interplay can arise more than once during the procurement trajectory. As a result, the specifications may constantly be altered (Valk and Rozemeijer, 2009).

As the procurement process advances, the specifications become more stable and definitive after an interactive procurement process between procuring organization and supplier. In complex procurement trajectories, there are a number of factors that have already been discussed in section 2.1. These factors make it difficult for a procuring organization to draw up concrete specifications. The constant interaction between procurement organization and supplier is the most important reason for the constant adjustment of the service definitions. Initially fixed service definitions are discussed again due to additional knowledge and experience of the supplier or because, during the course of the procurement process, the need arises to make agreements on additional matters with regard to the specifications (Valk and Rozemeijer, 2009).

Selviaridis et al. (2011) have conducted research into the how and why of the stability and instability of service specifications during the procurement process in logistics services. In their study, they have drawn the following conclusions:

1. Specifications are continuously adjusted during the procurement process due to a cyclic process of defining and redefining of the services. There, the attention to various characteristics (functions, processes, results, required resources) of the services to be procured varies.
2. Initially, the specifications are fairly open or instable and step by step become more concrete and stable at specific moments during the procurement process.
3. The case study identifies five factors that influence the stability of the specifications. These are: sourcing capability, supplier expertise reliance, complexity, relationship continuity, and adaptive interactions.

Gelderman et al. (2015) have conducted research into the dynamics of specifications in the ICT branch. Gelderman et al. (2015) concluded that, during the interaction between supplier and buyer, behavioral controls play a role during the specification phase and that the order phase aims for contractual controls in the output. Another conclusion in the study was that it is a good thing the specifications are stable and then instable, and subsequently stable again. In PBC, contracts are set in stone and cannot be made flexible and contractual outcome controls are aimed for. As soon as contracts are made more flexible, these are adaptive and changes are more easily implemented (Gelderman et al., 2015). Suppliers will then not mark down risks as much, due to which the procuring organization will not be confronted with additional costs and/or failed projects.

BVP is a procurement method that gives suppliers a high level of freedom. The philosophy of BVP is that the procuring organization does not have sufficient knowledge to draw up the specifications and that the supplier is the expert (Kashiwagi, 2011; Van de Rijt and Santema, 2009). All risks are borne by the supplier and the supplier draws up the contract. Adjustment is formal via contractual controls. This is perpendicular to research by Gelderman et al. (2015), in which the approach is that the procuring party and the supplier are constantly communicating about these specifications. As a result, there is stabilization and destabilization of specifications in the procurement trajectory.
Particularly due to this dialogue and collaboration, the procuring party gets what is possible and needed, and the supplier is provided with information on time so he can deliver what is possible and needed. Given the above, the following propositions can be distilled:

**P4:** The stability and instability of specifications in a BVP trajectory does not occur due to interaction between supplier and buyer, but due to identification of risks by the supplier.

**P5:** The specifications are fixed and are not altered after the contract is taken out. Adjustment is done by the supplier and the buyer is informed on the adjustment afterwards, but is not involved in it.

### 2.5 Relational and Contractual Governance

In the contract phase of the procurement process, all agreements between buyer and supplier are established in contracts. In complex procurement trajectories, it is a challenge for organizations to draw up contracts and employ control mechanisms that can handle pitfalls. The pitfalls are associated with uncertainty, transaction costs, and opportunism that are clearly involved in complex procurement trajectories (Williamson, 1985). Governance mechanisms can be formal and fall under contractual governance or can be stooled on trust and shared norms and then fall under relational governance (Poppo & Zenger, 2002; Wang et al., 2008; Olsen et al., 2005). Relational governance suggests a set of shared norms and values between organizations that have a business relationship (Wang et al., 2008). Important relational norms are flexibility, solidarity, and the exchange of information (Heide & John, 1992), and reciprocity, role integrity, and harmonization of conflicts in the relationship (Ness & Haugland, 2005). These norms form a protection against opportunistic behavior (Caniëls, Gelderman en Vermeulen, 2012).

Various studies have been conducted into governance in inter-organizational relationships. For example, relational and contractual governance can supplement each other (Poppo & Zenger, 2002; Ness & Haugland 2005). Furthermore, relational and contractual governance can be applied simultaneously (Caniëls & Gelderman, 2010; Olsen et al., 2005).

In their study, Ness & Haugland (2005) have subdivided contracts into three groups:

1. **Market contracts:** These are formal contracts in which measurable performance indicators have been included, such as price, delivery times, invoicing, etc.
2. **Internal contracts:** These reflect the hierarchy of exchange between organizations. For instance, who makes the decisions and which procedures are applicable.
3. **Relational contracts:** These are often associated with long-term relationships or strategic alliances. Norms and values and processes are central.

The three different contracts represent three different governance mechanisms, being price/incentives, authority, and trust and norms (Wang et al., 2008). Price/incentives and authority are formal contractual norms.

In their study, Poppo & Zenger (2002) indicate that formal contracts can undermine the trust between organizations and encourage the opportunism to record everything formally. The more complex the contract, the more detailed matters such as processes and obligations are described in contracts. Poppo and Zenger (2002) also name three dangers due to which organizations tend to favor formal contracts, which are: asset specificity (sizeable investments in assets or human capital), measurement difficulty, and uncertainty. Poppo & Zenger (2002) call these factors exchange hazards and encourage formal contracts. Furthermore, they indicate that economists and sociologists view trust differently. According to economists, trust can be calculated and sociologists indicate that trust must grow through repeated interaction between organizations. According to
Poppo & Zenger (2002), relational governance can work as a safeguard against undesired outcomes and make contracts more flexible which makes alterations and adjustments easier.

The interplay between contractual and relational governance must be balanced (Zeng et al., 2008). Too much relational governance can lead to blind faith and too much contractual governance can lead to overly detailed contracts and a lack of control. According to Caniëls, Gelderman and Vermeulen (2012) and Cao & Lumineau (2015), contractual and relational governance play a key role in inter-organization relationships and these often influence the performance of procurement projects.

During the concretization phase of the BVP procurement method, the contractor further details the submitted plan and risks and governance measures are further elaborated. The original offer is not adjusted. Moreover, the performance indicators are established for both the contractor and the client.

In the execution phase, the performance indicators are established and the contractor provides a detailed planning.

BVP is a procurement method that aims for output and the contracts have a formal character. The BVP procurement method was applied in the research case and, given the above, the following proposition is formulated.

*P6: The BVP procurement method mainly aims for contractual governance and hardly at all for relational governance, assuming the economical perspective when establishing governance mechanisms.*
3 Methodology

3.1 Research Method

A case study forms the basis for the present study. The argumentation and description of a case study have already been discussed in section 1.2 of this thesis. A case study was chosen because how and why questions regarding present-day events must be answered, which the researcher has no control over (Yin, 2003). Furthermore, the present-day phenomenon must be researched within its context and environment. The present study concerns a unique case which is the reason for the choice of a single case study (Yin, 2003).

The goal of this study is to describe the empirical observations (descriptive) of the following aspects in the application of the BVP procurement method:
1. Do specifications become stable and instable in the application of the BVP method and, if yes, how is this handled.
2. Is contractual governance the main focus in the application of the BVP method or does relational governance play a more prominent role than the BVP procurement method implies?

For the phenomena above, it is described how and why these occur in the application of the BVP procurement method in light of six propositions from literature. The six propositions are presented in the table below.

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>In the application of the BVP procurement method, all risks are identified due to which the client will not be confronted with calamities in unforeseen situations during the execution of the order.</td>
</tr>
<tr>
<td>P2</td>
<td>In the application of the BVP procurement method, a maximum price is determined by the client. The maximum price is not adjusted upward during the BVP procedure.</td>
</tr>
<tr>
<td>P3</td>
<td>In the concretization phase of the BVP procurement method, the original offer of the contractor is not altered anymore.</td>
</tr>
<tr>
<td>P4</td>
<td>The stability and instability of specifications in a BVP trajectory does not occur due to interaction between supplier and buyer, but due to identification of risks by the supplier.</td>
</tr>
<tr>
<td>P5</td>
<td>The specifications are fixed and are not altered after the contract is taken out. Adjustment is done by the supplier and the buyer is informed on the adjustment afterwards, but is not involved in it.</td>
</tr>
<tr>
<td>P6</td>
<td>The BVP procurement method mainly aims for contractual governance and hardly at all for relational governance, assuming the economical perspective when establishing governance mechanisms.</td>
</tr>
</tbody>
</table>

Table 3.1: Propositions

The research method aims to answer the questions of how the practice deals with contractual and relational governance and with the (in)stability of specifications during the BVP procurement process. Is contractual governance really the main governance mechanism and do specifications remain stable? Why do these phenomena occur? The BVP procurement method presumes that, in the proper application of the procurement method, the procuring party is not exposed to risks and
that it receives exactly what it wishes to procurement. The question is whether this is true and if BVP does not promise too much. BVP is a form of PBC which is mainly output-oriented and the procurement process and the contract phase are formally completed. Research by Caniëls et al. (2012), Gelderman et al. (2015), and Selviaridis et al. (2011) shows that it is good that specifications become stable and instable and that there is an interplay of contractual and relational governance. Particularly the occurrence of these phenomena creates interaction between buyer and supplier and the procurement process is not unidirectional. Due to the interplay between contractual and relational governance and (in)stability of specifications, the procurement process yields good results for both the buyer and the supplier. The literature study has resulted in six propositions regarding these phenomena which receive attention in the BVP process. P4 states that the destabilization and stabilization of specifications is not caused by the interaction between supplier and buyer, but by the identification of risks by the supplier. P5 states that the specifications are not altered after the contract has been entered into. P6 states that BVP is mainly oriented on contractual governance assuming the economical perspective when establishing governance mechanisms. In the empirical study, the phenomena are detected during the BVP procurement process and it is researched to what extent the practice supports these propositions.

The present study is aimed at the BVP procurement process and observes this from a number of perspectives in order to create a clear view of the procedure of the BVP procurement process. The perspectives are the procurement dossier, the contract, the weeklies, and the participants in the procurement process, both from the procuring and the selling organization. The procurement dossier is used for the document analysis. The documents from the procurement dossier include the following documents: the decision making to the procurement process, the documents from the preparation phase, the evaluation phase, the concretization phase, and the contract phase. Furthermore, all tendering documents, interview documents from the BVP trajectory, information notices, and the weeklies are studied. A complete overview of the documents is given in appendix 2.

The analysis unit in the present study is an event, namely the BVP procurement process. It is expected that the results of this study will yield additional insights into the application of contractual and relational governance in combination with the stabilization and destabilization of specifications with regard to the studies by Caniëls et al. (2012), Gelderman et al. (2015), and Selviaridis et al. (2011).

### 3.2 Data Collection

#### 3.2.1 Selection of Cases

The data were collected in one completed BVP procurement process. In the selected case, this concerns a BVP procurement trajectory, namely the project Optimization utilization biogas sewage treatment plant Emmen. By means of the problem definition, a number of variables have been constructed from which six propositions have been distilled. The research case must meet a number of conditions in conformity with the problem definition.

1. It must concern a complex product, service and/or delivery to be procured.
2. The BVP procurement method must have been applied for the procurement of the project.
3. It must concern a completed procurement project, allowing the entire procurement process to be studied with regard to the phenomena of relational and contractual governance and the (in)stability of service definitions.
4. There must be constant interaction between the procuring organization and selling organization in order to study the phenomena of point 3.

The following additional requirements are applicable:

1. The procurement process was conducted within the procuring organization by a team of which the participants could act as respondents for the present study.
2. The service supplier has performed the process with a team of which the participants could act as respondents for the present study.
3. A procurement dossier was kept which is available for research.

The substantiation a complex procurement trajectory must meet is provided in section 2.1. The BVP procurement method has been discussed in section 2.3.

A complex procurement trajectory has been selected as case. The case is about the procuring of a service, delivery, and installation, namely the project optimization utilization biogas sewage treatment plant Emmen, in Water Authority Vechtstromen (previously Velt en Vecht). A long-term project in which multiple parties are involved in the procurement process. In addition to the procuring organization and selling organization, engineering agencies/consulting agencies are also involved. Therefore, this case contains sufficient data and sufficient perspectives due to which events and insights of respondents can be connected within this one case. The following applies to the case optimal utilization biogas:

1. The project is a complex mix of deliveries and services. This case concerns technical complexity, significant risks that are difficult to control by the procuring organization or of which the procuring organization has no in-house knowledge, the results or outcomes are not fixed and there are multiple parties involved. Additionally, the project has a time span of multiple years.
2. As procurement method for the present project, the BVP procurement method was chosen to cope with the described complexity.
3. The project optimization utilization biogas sewage treatment plant Emmen is a completed procurement process for which a maintenance contract was also taken out.
4. There is continuous interaction between the procuring and selling organization in this case.

Water Authority Vechtstromen (previously Velt en Vecht) wishes to optimize its energy management in a sustainable way in the sewage treatment plant Emmen. The current installation has become outdated and does not meet the requirements from the WM permit (environmental management Act). Therefore, this project is defined as ‘Optimization utilization biogas sewage treatment plant Emmen’.

There is no life without water. We need it as drinking water, for agricultural purposes, in animal husbandry, and industry. The Netherlands usually has plenty of water, but is often unequally distributed and polluted. Therefore, water management is required. If there is too much water, the Water Authorities dispose of it. If there is too little water, they supply it. With permits they regulate the disposal of polluted water and they purify the sewage water. Moreover, they maintain flood defenses such as dykes and dunes. Some Water Authorities also manages roads and waterways.
Water Authority Vechtstromen (previously Velt en Vecht) is responsible for the management and maintenance of water in the south-east of the province of Drenthe and the north-east of the province of Overijssel. The management area of the Water Authority is highly diverse. The area includes nature, agriculture, buildings, and open water. The goal of the procurement trajectory is to select the expert capable of realizing the optimization of the gas and heat usage of the sewage treatment plant Emmen. The intended effects include: greater heat turnover capacity, higher energy efficiency, the most optimal utilization of biogas production, and striving for energy-neutrality.

### 3.2.2 Interviews

Three parties are involved in the project utilization biogas sewage treatment plant Emmen. First, the procuring organization, Water Authority Vechtstromen in Coevorden (previously Water Authority Velt en Vecht). The contractor who won the tender for this project is SH+E from Barneveld. SHE+E was taken over in 2013 by another market party and since has the name Eliquo Energy & Water BV. Additionally, a consulting engineer was hired by the Water Authority to aid them in the project.

Through the client, five experts were involved in this project who all have knowledge within the field and/or are procurement experts. The procurement advisor and the project manager of this trajectory are the experts in the procurement domain. Additionally, they are a conversation partner in the trajectory. The project leader purification, the project leader execution, and the project manager are the material experts and have content-related knowledge of the field. They are also the ones who can draw up specifications.

Through the contractor, two experts are involved in the procurement trajectory and the execution of the order. These are the director/project manager and the project leader of the contractor. Both managers are involved in the procurement trajectory and the execution of the project. They are conversation partners during the entire project and have content-related expertise.

The advisory engineering consultancy which has been hired has appointed one expert in materials. This expert has contributed to the order description, the drawing up of specifications, and the guidance of the client before, during, and after the project. Moreover, this expert has also served as a conversation partner for the client towards the contractor. The abovementioned experts have been interviewed (see appendix 1).

By working with respondents from various parties, it is possible to compare the possible perceptions of individual employees with perceptions of other employees. The interviews have been prepared identically, but have developed differently depending on the respondent due to the specific position of that respondent with regard to the executed procurement process. A recording was made of all interviews.

### 3.3 Operationalization

In this section, the terms from the propositions will be translated into measurable definitions that can be used in the data analysis.

- A procurement trajectory is complex if there are a lot of risks, a high level of uncertainty about the outcomes, technical complexity, and if it involves multiple parties (Caldwell, 2009; Olsen, 2005).
A risk is a problem that cannot be controlled by the client because the client does not have sufficient knowledge and expertise to identify it (Kashiwagi, 2010, 2012; Van der Rijt and Santema, 2009).

Competences, knowledge, and skill are factors that contribute to the successful performance of the project to be procured (Kashiwagi, 2010, 2012; Van der Rijt and Santema, 2009).

A stable service definition is a service definition on which a positive decision has been made (has been approved) and that is not under discussion in the procurement process (Valk and Rozemeijer, 2009).

An instable service definition is a service definition in which the parties involved in the procurement process have not yet reached agreement and regarding which interaction is still taking place (Valk and Rozemeijer, 2009).

A maximum price is an amount established by the client in the preparation phase of the BVP trajectory that may not be exceeded (Kashiwagi, 2010, 2012; Van der Rijt and Santema, 2009).

Contractual governance concerns formal contractual governance mechanisms such as price, delivery time, invoicing, etc. (Poppo & Zenger, 2002; Wang et al., 2008; Olsen et al., 2005).

Relational norms are flexibility, solidarity, and the exchange of information (Heide & John, 1992), and reciprocity, role integrity, and harmonization of conflicts in the relationship (Ness & Haugland, 2005).

Market contracts are formal contracts which include measurable performance indicators such as price, delivery times, and invoicing, and that are relatively inflexible (Ness and Haugland, 2005).

### 3.4 Data Analysis

For the present study, the primary sources of data collection are the interviews and the document analysis. The document study consists of the full investigation of the procurement dossier. The interviews are fully transcribed and offered to the respondent for approval. In qualitative research, the data analysis is a process which can occur both after and during the data collection. The one interview can provide insights or data which in turn can serve as input for the next interview.

In the present study, the results are categorized on the basis of the variables from the literature study. By means of a data matrix, an attempt is made to recognize patterns and whether or not the propositions are supported. The table shows the respondents in the columns and the questions and core of the answers (often only key words or fragments of sentences) in the rows.

The data have been analyzed by means of the BVP procurement process and in light of the propositions. Data from the document analysis and the interviews have been ordered and connected to each other. The propositions (theoretical expectations) are compared to the empirical observations. Due to this comparison, it can be evaluated whether the propositions are supported.

### 3.5 Methodological Issues

#### 3.5.1 Construct Validity

Various sources have been used within one case. These concern the procurement dossier and the seven respondents. The respondents are from three different organizations. Four respondents are from the procuring organization, Water Authority Vechtstromen (previously Water Authority Velt en Vecht). Two respondents are from the contracting organization, SHE from Barneveld. One respondent is from the external advisory engineering consultancy. Triangulation occurs by relating the data from various sources to the propositions so statements do not rest on a single observation.
The results of the document analysis and the interviews are related to each other and a chain of evidence becomes visible with regard to relational and contractual governance and the (in)stability of service definitions.

### 3.5.2 Internal Validity

Results are proven by means of examples from the interviews, making what happened visible during the BVP procurement process with regard to contractual and relational governance and the (in)stability of specifications and which intentions the various respondents had. The examples are related to each other due to which they support and enrich each other and prevent that a conclusion is drawn on the basis of a single statement. The examples provide an internally verifiable relationship between the empirical research and the research results.

### 3.5.3 External Validity

Both the documentation study and the interviews have been prepared on the basis of theory on the procuring by means of the BVP procurement method, the theory on relational and contractual governance, and the theory on the (in)stability of service definitions. The research results have once again been related to the theory. Consequently, the results are embedded within the procurement theory concerned.

### 3.5.4 Reliability

The case study was set up on the basis of the protocols arising from the theory of case studies. The substantiation of the chosen method refers to the theory. Therefore, there is a theoretical basis for the research approach.
4 Results

In this chapter, the results of the case study are discussed on the basis of the research question of the present study and the 6 propositions. In section 4.1, the project to be procured is clarified in more detail. Section 4.2 discusses the results of the document analysis, section 4.3 discusses the results of the interviews, and section 4.4 discusses the evaluation of the propositions. Section 4.5 contains an ordering of the results regarding the themes from the research question.

4.1 Case Optimization Biogas Sewage Treatment Plant Emmen

The researched case concerns the procurement of an optimization project on a sewage treatment plant. The sewage treatment plant Emmen has an installation which primarily ferments sludge and excess sludge. This sludge comes from the sewage treatment plant Emmen and the remaining 6 sewage treatment plants of the Water Authority Velt en Vecht. During the (anaerobe) fermentation process, biogas is created, a mixture of methane and carbon monoxide, polluted by H2S and Siloxanes. In a cogeneration, the biogas is converted into electricity and heat. The heat is used to heat up the sludge fermentation tanks and buildings. The electricity is used for the purification. The biogas production has greatly increased as all the purification sludge of Velt en Vecht is fermented in the sewage treatment plant of Emmen since the renovation. A substantial part of the biogas is currently flared. The objective is to utilize all the biogas and to convert it into energy in the form of heat and electricity for the benefit of the installations on the grounds of the sewage treatment plant Emmen. In 2012, a central heating boiler was installed to offset heat shortages of the sludge fermentation tank.

The project objective has been formulated as follows:
The optimal utilization of all the produced biogas for the production of thermal and electrical energy.

4.2 Document Analysis

The procurement dossier has been saved by the procurement department and contains the formal documents as of the start of the procurement process up to the execution and completion of the project. In appendix 3, an overview is included of the documents in the procurement dossier. The following analyses have been conducted on these documents:

1. An analysis of the chronological course of the procurement process. (section 4.2.1)
2. Which phenomena with regard to the BVP procurement process, (in)stability of the service definitions, and contractual and relational governance can be deduced from the documents. (section 4.2.2)

4.2.1 The Chronological Course

From the documents, the course of the BVP procurement process in time has been determined.

<table>
<thead>
<tr>
<th>Procurement phase</th>
<th>Activity</th>
<th>Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation phase</td>
<td>Internal coordination of the specifications, drawing up tender documents and planning. Explanation of BVP method. Tender is published.</td>
<td>Sept 2012</td>
</tr>
<tr>
<td>Evaluation phase</td>
<td>Candidates have submitted an order and are evaluated in terms of risk and opportunity dossier, performance dossier, and interviews.</td>
<td>Jan 2013</td>
</tr>
<tr>
<td>Concretization phase</td>
<td>Pre-award phase in which the order is elaborated on in further detail and the agreement is drawn up and signed.</td>
<td>February 2013</td>
</tr>
<tr>
<td>Execution phase</td>
<td>Contractor starts the execution of the project. Progress is monitored by means of weeklies.</td>
<td>May 2013</td>
</tr>
</tbody>
</table>

*Table 4.2.1 Course BVP process case*
**Preparation phase**
The start of the project was January 2012, when an exploratory investigation was conducted by an engineering consultancy by order of the Water Authority into the possible CHP scenarios and market consultation. The engineering consultancy has delivered a report on this (doc.33). This report formed the initiation for the first internal discussions on the service specifications. The internal discussions revealed that the project should not only be on the CHP installation, but that it included more than simply installing a CHP installation. That would not solve the problem. The supply of clean gas also formed part of the problem. For this purpose, it was decided to further expand the project and to tender for a total solution in the market. The documents from the preparation phase show that the stabilization and destabilization of the service definitions did not only arise from the market consultation, but also from internal discussions.

The preparation phase was internal, but also there a lot of alterations occurred because we were still researching and discussing the right specs (GS).

In the preparation phase, because there was a lot of internal discussion on whether we had the right specs (BB).

In the period from June 2012 until November 2013, the project team of the Water Authority (BB, BS, VL, LJ, and JD) has detailed the scope of the tender and has drawn up as many documents with specifications and information as possible for the benefit of the tender documents (doc.20, doc.22 up to doc.32, and doc.34).

In the period from September 2012 until December 12, 2012, an information meeting was also organized in the preparation phase about the BVP method to provide explanation on the BVP method for both the Water Authority and the contractors (doc.16 and 17).

**The tender procedure**
For the tender, the documents with all specifications, information for the tenderers, the quotation, and the awarding criteria were combined and publicly published via www.tenderned.nl (doc.1 up to 14, and doc.18). During publication of the tender, the service definitions are stable. There have been three rounds of questions during the tender procedures, the Information Notes (hereafter IN) 1, 2, and 3. Additionally, a clarification Note was published (doc.35 up to 38). During the INs, clear interaction can be perceived between the client and potential contractors. In the INs, market parties ask a lot of questions about the specifications.

At the time of the information notes, lots of things have been altered. (LJ)

The maximum price has been altered in the INs. This is not supportive of P2. The maximum amount has been altered from including VAT to excluding 21% VAT, and the multi-year maintenance was added which is covered via the exploitation. Moreover, a number of requirement specifications are altered due to which there are three versions of the tender ballot and the tender document (version 1.1, 1.2, and 1.3 doc.1, 2, 7, and 19). P4 is therefore also not supported, because the specifications do not only alter due to the risk inventory, but also due to the interaction of the Water Authority with the market parties.

**Evaluation phase**
The offers of the tenderers are evaluated during the evaluation phase. This was a qualitative evaluation (doc.42, 43, 44, 45, 47, 50, and 51). In this phase, no specifications were discussed, but the submitted documents are tested on the basis of knowledge and expertise and whether tenders have a good overview of the project. Additionally, the risk and opportunities dossier is evaluated in
this phase and questions are asked about this in the interviews. Below is a fragment of the interview between the client and a tenderer.

*Why are these risks? These are things that you will handle, aren’t they?*
*Yes, the risks that have been named here are risks that are not directly influenced by us (BV).*

The fragment above does not show that all risks can be governed by the contractor. For risks the contractor cannot exert influence, consultation with the client is essential. Therefore, there is interaction between the parties on the risks. This is contradictory of P4.

*During the evaluation phase, nothing can be altered because the only test is whether the plan is actually the best (LJ).*

The evaluation of the tender (doc.59) shows that not all dominant information was found because the questions were not asked by a material expert. Below are a few fragments from the evaluation document.

*The interviewees had also expected more content-related questions. The interviewer fails to ask follow-up questions, because he does not have sufficient content-related knowledge. It is preferable that the interviewer has affinity with the field.*

*Gerrit had expected more innovation from the tenderers. They did present ideas on certain components, but not dominantly.*

At the end of the evaluation phase there is the intention to award (doc.48). This initiates the pre-award. The pre-award in this tender was awarded to SH+E (now Eliquo BV).

*All offers have been evaluated on the basis of the criteria included in the descriptive document. We intend to enter into the pre-award phase with SH+E Nederland BV. Your offer has been marked as the ‘most economically advantageous tender’ (doc.48).*

**Concretization phase**

In the concretization phase, the contractor has elaborated on his plan in further detail. A detailed planning has been drawn up, and the risks and control measures have been further elaborated. SH+E has written an Action Plan during the concretization phase and this plan has been discussed with the Water Authority (doc.54, 55). The order has remained largely unaltered in general terms, but on detail level it has been changed. The main order has been very broadly formulated, namely as an optimization process for the utilization of biogas. Various solutions were seen, as there were four tenderers, each with another proposal (doc.40). The broad formulation leads to interaction between both parties as multiple questions are asked from both sides. Doc.56 report pre-award with SH+E visualizes the detail alterations. Below are a few fragments.

*During this phase, the Water Authority will also provide additional information (also see IN) and will share the project risks reported by the remaining tenderers and the Water Authority with SH+E.*

*BB clarifies that the Water Authority is interested in a further detailing of opportunity No.1. The Water Authority currently does not wish to make use of opportunities 2 and 3. SH+E confirms that they will further elaborate on opportunity No. 1 in their Action Plan during the design phase of the project (after pre-award).*

*The project team of the Water Authority asks several questions and makes concerns and risks known. The request to SH+E is to include these items in the Action Plan, including risk dossier.*

*The Water Authority will signal risks by making other tenderers available to SH+E via email.*
JD says that there is probably already a buried gas pipe present at the location of the suggested site for the new CHP installation. SH+E will assess by means of the documentation that has been made available (WVV action 3) and will determine an alternative site if necessary.

The passages from the report above confirm that the necessary changes have been made on detail level. There is interaction between the Water Authority and SH+E and the documents show that the process of stabilization, subsequent destabilization and again stabilization of specifications are clearly present. There is continuous interaction between the parties. Moreover, during the concretization phase, the risks of other tenderers have been made known to SH+E and SH+E was asked to elaborate on and govern these. Additionally, the first calamity was revealed in this phase; a gas pipe at the construction site. Consequently, P1 is not supported. P3 is also partially unsupported. The main order and the accompanying offer remain intact, but the specifications have been altered on detail level. The stabilization and destabilization of specifications also occur due to interaction between the Water Authority and SH+E and not merely due to identification of the risks by SH+E. The document analysis shows that P4 is not supported, because the specifications also alter as a result of interaction.

After approval of the Action Plan, SHE will draw up the basic agreement and submit it to WVV. This basic agreement must also include matters that have not yet been established in the offer of SH+E.

From the fragment above from the Action Plan pre-award report (doc.55), it seems that the contract was not drawn up by SH+E alone, but was drawn up jointly. According to the BVP method, the contract is drawn up by the contractor. In this BVP trajectory, however, that does not apply. Again, there is interaction between the client and the contractor.

**Execution phase**

The weeklies are an important aspect of this phase. In the weeklies of this project, the following matters are monitored:

1. Which calamities occur and how are these solved.
2. Controlling the risks. Do the risks manifest themselves and what does the contractor do to control the risks?
3. Progress of the project. Is the project going according to plan and time schedule? If not, what does the contractor do to adjust?
4. Consultation between the Water Authority and SH+E. What alterations occur and by whom must the costs for these alterations be borne?

There are 36 weeklies present in the procurement dossier. The summary document weeklies has been used for the document analysis (doc.57). Below is a selection of the most important findings from the weeklies:

- A lack of up-to-date certificates and inspection reports which led to a false start of the project. This has incurred additional expenses. Expenses are borne by the Water Authority which has been agreed in consultation.
- Unacceptable risk of subsidence new installation because of poor soil quality. This has led to additional expenses because additional pile driving had to be performed. These expenses are borne by SH+E as agreed in consultation.
- Necessary building ground on sewage treatment plant Emmen not available in conformity with zoning plan of the municipality of Emmen. Project delay. Water Authority and SH+E ‘guide’ authorities in a prompt permit granting. Division of responsibilities between municipality and province create delay in the settlement of the permit. Expenses for WSV.
• SH+E has ordered Van Gelder to place dewatering system without informing the Water Authority of this in advance. Additionally, there was no consultation with the management on the adjustments of the work. SH+E and Van Gelder urgently provide S&H forms, specific for the activities and the accompanying risks in the case of redirecting pipelines. Redirecting pipelines occurred at the expense of WSV because these were not on the drawings.

• CHP engine does not start / fails. 'Teething troubles' in the first weeks hinder operations WSV. Extra assistance of synergy specialists.

• Water Authority does not pay outstanding invoice of SH+E in connection with troublesome financial situation of parent company. Financial situation SH+E Group (GmbH) troublesome: automatic stay requested.

• Remedying residual issues and general completion later than discussed. Eliquo keeps residual issues list, stating when and which residual issues are remedied. It is attempted to continue the activities during the summer as well.

Adding additional activities such as emergency power provisions have not been included in the weekly, but in a separate document (doc.58 replacing main distributor). The consultation structure was as follows (doc.55):

- Project management consultation during the entire runtime of the activities, a four-weekly PM consultation will be held.
- Technical consultation Water Authority and SH+E hold a technical consultation as needed. Both parties can initiate such a meeting.
- Execution consultation between Vincent van der Linden (WVV) and Barry Verduijn (SH+E) is held weekly during the execution phase.

The weeklies show that the Water Authority and SH+E work together during the project. The division of additional costs is agreed by mutual consultation. If the Water Authority is culpable, the costs are paid by the Water Authority and if the calamity was due to SH+E, SH+E paid the expenses. P6 is largely unsupported. The contract was not a market contract (doc.52). The documents show that there was a balance between contractual and relational governance.

4.3 Interview Results

The interview questions have been categorized into the phenomena to be studied, which are:
1. The BVP procurement process.
2. The stability and instability of service definitions.
3. Contractual and relational governance.

The set-up and design of the interviews is included in appendix 1. The interview results per phenomenon are described below. The text in italic are fragments from the interviews.

The BVP procurement process

The BVP approach rests on the conviction that risks are minimized or eliminated in case of effective use of information. It is the most important task of clients to recognize and select experts. By emphasizing proactive behavior on the part of the contractor, all risks can be identified, and therefore controlled, beforehand. All respondents were positive about the influence of BVP on the success of the project.

It became clear that the problem was more extensive, because there was also a gas and energy problem. This made it complex and we could not have solved this without BVP (BB).

The trajectory was successful because more was done than intended and the results exceeded expectations. An integral solution was chosen (LJ).
It was certainly a successful project. Thanks to BVP, we can make use of our creativity, knowledge and expertise in the offer without being limited by a scope (BV).

Initially, the trajectory to be procured was a CHP installation. However, the problem was bigger than originally thought. It was not just in the CHP installation, but also in the supply of gas and the quality of the gas. This made the problem more technically complex. The project was expanded into an optimization process utilization biogas. According to the BVP philosophy, BVP is a good method to cope with complexity. Questions were asked about this subject during the interviews and this provided the following image.

We did not have sufficient in-house knowledge. This was especially due to the technical complexity. The contractor has certainly taken his responsibility. The dominant information was generally out in the open. During the trajectory, however, there were a number of questions that arose. It was not all black and white (BB).

They did have some in-house knowledge, but not enough. The complexity was caused by the extension of the building permit. The complexity was also related to the budget, there were multiple stakeholders and in the technical complexity (BV).

With regard to complexity, the respondents agree that BVP is a good method to cope with complexity. In this project, the complexity was mainly caused by the technology and the permit trajectory. Not all dominant information was present, which led to adjustments.

The supplier selection
The theory of Kashiwagi (2011, 2012) concerns information and risks. Both matters are of vital importance to the procurement process. After all, it is key that an organization selects a contractor who will best realize its project. In order to predict this, it is crucial to know as much as possible about the contractor, and to use this information in the selection process. Secondly, the contractor must be a market party who can best utilize the information on the project. He or she is the expert and must be best able to use this information to signal and control risks and to successfully complete the project. The results from the interviews are as follows:

Not all risks have been identified by the client. Due to a lack of information, additional work has arisen and, consequently, the maximum price has been increased. Not all dominant information was identified (LJ).

During the execution, there were matters that should have been discovered during preparation, such as old cables and pipelines in the purification structure. The foundation was a calamity, the ground did not have sufficient bearing capacity for construction and that was a risk that had not been identified beforehand. Due to the additional work and additional requirements, the maximum amount has been increased (VL).

All respondents are convinced of the knowledge and expertise, proactivity and innovative capacity of the contractor. Not all risks were identified beforehand, due to which the client was confronted with undesired events during execution. Furthermore, the additional work and undesired events caused the maximum price to be increased.
**The stability and instability of service definitions**

Initially established service definitions are once again under discussion, due to the additional knowledge and experience of the supplier or because the need has arisen during the progress of the procurement process to make supplementary agreements with regard to the specifications (Valk and Rozemeijer, 2009). According to Kashiwagi (2012), the contractor is the expert and there is no interaction about the service definitions. The BVP philosophy is that the procuring organization does not possess sufficient knowledge to establish the specifications and that the supplier is the expert (Kashiwagi, 2010; Van de Rijt and Santema, 2009). Section D of the interview questions pays attention to this in light of the BVP procurement method. This provided the following results:

Because questions were asked, interaction arose between ON and OG, leading to the destabilization and subsequent stabilization of specifications. The offer did not change in general terms. From the start of the BVP trajectory until submitting the offer, you have alterations that were brought to the discussion by the contractor. As the BVP process progressed, the specifications became increasingly stable. Constant dialogue? Yes, absolutely (LJ).

The stabilization and destabilization of specifications did not only occur due to identification of risks by the contractor and it definitely happened in consultation with us. There was additional work and the scope has changed. This was done by both parties and was discussed and questioned by both parties. Yes, discussion became increasingly less frequent, a definite yes! What Kashiwagi says does not hold true! (GS).

The BVP method already automatically leads to alterations, due to the adding of risks of others. Nothing but alterations in the execution phase. The maximum price was a challenge (VL).

The respondents’ answers show that dialogue is essential in complex trajectories. In complex trajectories, not all risks are clear, can be overseen or can be placed at the responsibility of the contractor.

**Contractual and relational governance**

In the contract phase of the procurement process, all agreements between buyer and supplier are recorded in contracts. In complex procurement trajectories, it is challenging for organization to draw up contracts and employ governance mechanisms that can deal with pitfalls. In this project, a UAV-gc (Uniform Administrative Conditions for integrated contracts) construction was applied to stipulate the contract conditions. According to the BVP philosophy, output is what is aimed for and hardly for relational governance mechanisms. In the last section of the interview questions, the contract formulation, performance indicators, and how adequately the project could be guided by the contract are discussed. Additionally, questions are asked with regard to flexibility, solidarity, and trust. The answers of the respondents are stated below.

Purely aiming for output would not have led to the desired end result. The support base would have been missing. I aimed for the relationship (VL).

The answer is no, it was not purely oriented on formal PIs. Also on trust and solidarity that existed between us. The contract was flexible. The exchange of information was perfect and we had a common goal. I principally do not believe you can simply aim for just output, also not in case of BVP. The relational aspect is more important, the contract forms an incentive. You need both (BB).

It is not the case that the contractor draws up the contract and the client says “where do I sign”. In addition to the PIs, there was sufficient flexibility. The contract was flexible enough to meet additional
wishes and to cope with calamities. The contract was not just pulled out at every occasion. We have achieved more by means of the relational aspects than by the formality. With just the contract, you won’t build up a relationship and working on trust alone creates too many risks (RL).

The above shows that, in addition to the contract, relational norms were also important to the successful completion. The project was not merely contract-oriented, as in conformity with the BVP method, but relational governance mechanisms were also amply applied.

In conclusion of the interview, each respondent was asked to give an overall evaluation of the BVP method. Matters such as usability of the method, when it did and did not work and whether another contract form or tender form would have been better in hindsight were discussed. The answers are given below.

A pure BVP as Kashiwagi prescribes does not work. Dialogue, trust, and flexibility are essential! (LJ).

BVP offers room for new ideas, only the limitation of the number of A4 pages on which the offer must be written is a disadvantage. A competitive-oriented dialogue was also a possibility. The disadvantage of BVP is the maximum price, which is limiting, because this could inhibit innovations. The expert cannot be the expert on all components within the order, that’s where Kashiwagi is wrong! (BV).

The respondents’ answers confirm that BVP is not a good method for coping with complexity, but that constant dialogue and dialogue form the key to success. A pure BVP method in a complex trajectory is therefore not recommended by the respondents.

4.4 Evaluation of the Propositions

In this section, the propositions are evaluated and compared to the interview results. With regard to the document analysis, the propositions have already been tested in section 4.2. The analysis is described per proposition and it is also indicated whether or not the propositions are supported. The propositions have been formulated on the basis of the phenomena:

1. The BVP procurement method.
2. The stability and instability of the service definitions.
3. Relational and contractual governance.

P1: In the application of the BVP procurement method, all risks are identified due to which the client will not be confronted with calamities in unforeseen situations during the execution of the order. The interviews clearly show that not all risks were identified because undesired events have occurred during the execution of the project. The undesired events have also led to additional work and additional expenses. A few calamities mentioned by the respondents are the foundation, the redirecting of cables and pipes, and incomplete drawings of the situation. The contractor also indicates in the interview that it is impossible to control all risks.

A few interview fragments are repeated below.

The maximum price was increased. This was caused by unforeseen situations which the client had not foreseen, where the question could be asked whether the requirement specification was complete (RL).

Not all risks have been identified by OG (LJ).

During the execution, there were matters that should have been discovered during preparation, such as old cables and pipelines in the purification structure. The foundation was a calamity, the ground did
P1 is therefore not fully supported. The client was confronted with calamities and unforeseen situations during execution.

**P2:** In the application of the BVP procurement method, a maximum price is determined by the client. The maximum price is not adjusted upward during the BVP procedure.

This proposition is clearly not supported as well. The maximum price has been adjusted. The respondents indicate that there have been several cases of additional work, including the emergency power supply and the redirecting of cables and pipelines. Below are a few interview fragments confirming this.

The additional work and supplementary requirements has led to an increase of the maximum amount. The continuous operation, the emergency power supply, to ensure that the installation could remain operational, created an increase of the maximum price (VL).

Due to additional work, the maximum price has been increased. This work included the converting of an E-casing at our request and the redirecting of cables and pipelines (JD).

The client has made extra budget available for the execution of the additional wishes at a later stage. For instance, the ‘islanding’ as emergency power supply was an additional requirement (BV).

**P3:** In the concretization phase of the BVP procurement method, the original offer of the contractor is not altered anymore.

In this project, only changes on detail level have occurred during the concretization phase. The contractor’s offer has not been altered in general terms. This proposition is partly supported. The BVP method also indicates that, in the concretization phase, the offer is worked out in detail by the contractor. However, the interaction with the client led to changes in details or additions to the order. Therefore, in this case, the contractor did not simply work out a detailed plan which the client agrees to, as in conformity with the BVP method. A few interview fragments:

In the first offer, we did not yet know that the quality of the biogas was not high. This had consequences for our offer and we had to change technical components. In the pre-award, a part has changed (falls under the concretization phase) (BV).

Yes, the offer has not been altered in general terms. There were technical deviations such as the desulfurization. Technical deviations will always occur, there’s nothing that can be done about that! Kashiwagi is too rigid in this aspect (BV).

The offer has remained unaltered in general terms, but alterations on detail level have occurred, such as the gas filter, pipe works, and foundation. That’s just the way it is, there are always alterations in a complex trajectory (VL).

**P4:** The stability and instability of specifications in a BVP trajectory does not occur due to interaction between supplier and buyer, but due to identification of risks by the supplier.

P4 did not hold true, this proposition is not supported. The interview results show that specifications did not only stabilize and destabilize due to the identification of risks. There was also discussion about the specifications and the execution. The interview fragments below confirm this.
The specifications were altered by the management department of the Water Authority, because the department gave additional requirements. From the start of the BVP trajectory until the submitting of the offer, there are all kinds of alterations that are called into question by the contractor. In the concretization phase, both parties have discussed the specifications (LJ).

What Kashiwagi says is really untenable! You never have full insight into everything, so the answer is no. The difference between the offer and what we expect also leads to interaction due to which alterations always occur (GS).

During the project, the purification managers presented additional technical requirements that made the specifications instable (RL).

**P5:** The specifications are fixed and are not altered after the contract is awarded. Adjustments are made by the supplier and the buyer is informed of the adjustment afterwards, but is not involved in it. P5 is also not supported. The interview results show that the specifications have been altered after the contract was entered into. Moreover, the contractor has not always informed the client in hindsight of the adjustments, but has rather consulted the client beforehand.

The client has altered specifications after the contract was entered into, including the emergency power supply (RL).

There was additional work and the scope has been altered. Most in the execution phase, actually (GS). Nothing but changes in the execution phase. Caused by renewed insights of both the contractor and the client (VL).

In the project meetings, we have also discussed many matters, and during construction on location matters have also been discussed and resolved by mutual consultation. You can’t say: I as contractor decide that (JD).

**P6:** The BVP procurement method mainly aims for contractual governance and hardly at all for relational governance, assuming the economical perspective when establishing governance mechanisms.

This proposition is partly supported. The contract contains a number of hard performance indicators including the date of delivery, availability, reliability, and invoicing. The PIs are contractual governance mechanisms that fall under the economic perspective. However, the interview results show that the relational governance mechanisms have been applied more, and that these were balanced with the contractual governance mechanisms. Below are a few interview fragments.

The contract wasn’t simply pulled out every time. No, all soft conditions that apply during a trajectory, such as relationship and trust, contribute to the success. With a contract alone, you won’t build a relationship and working just based on trust creates too many risks (RL).

We noticed that you couldn’t just go by the contract, because that will lead to people digging in their heels. We had the contract when we needed it (GS).

The table below states which propositions were not, partly, or completely supported.

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<tbody>
<tr>
<td>P1</td>
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<td>P2</td>
<td>Is not supported</td>
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<td>P3</td>
<td>Is partly supported</td>
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<td>P4</td>
<td>Is not supported</td>
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<tr>
<td>P5</td>
<td>Is not supported</td>
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<tr>
<td>P6</td>
<td>Is partly supported</td>
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*Table 4.4 Conclusions on propositions*
5 Conclusions, Discussion, and Recommendations

5.1 Conclusions

The buyer-supplier relationship is central in the present study. BVP is a procurement method that presumes you can leave everything to the supplier as he or she is the expert. By uncovering all dominant information and identifying risks, the procuring organization will get the best contractor and the desired result. In practice, we often encounter mixed forms in buyer-supplier relationships. Governance mechanisms are employed to control the procurement project. Relational and contractual governance can also interact, as shown in research by Caniëls et al. (2012) and Cao and Lumineau (2015). Precisely the interaction between the governance mechanisms is seen as the key to a successful set-up and execution of complex procurement projects (Caniëls et al., 2012). In studies by Selviaridis et al. (2011) and Gelderman et al. (2015), the connection was also made to the interaction between relational and contractual governance during the process of stabilization and destabilization of the service definitions. The question is whether such an interaction could also be observed in BVP procurement projects. The problem definition for the present study is as follows:

How is the (in)stability of specifications and (contractual and relational) governance handled in practice in the application of the BVP method in complex procurement trajectories?

The most important conclusions of this study are:

1. Not all risks can be identified beforehand and controlled as the BVP method presumes.
2. The BVP procurement method is not a good method for coping with complexity.
3. The BVP method was not the key to success, but rather the relationship and constant dialogue between the client and the contractor.
4. The maximum price cannot be maintained in complex procurement projects because specifications are altered.
5. In complex procurement trajectories, where BVP is applied, service definitions cannot be kept stable.
6. The constant dialogue between buyer and supplier is necessary for success in case of complexity.
7. Only being guided by the contract is impossible. The interaction between contractual and relational governance is the key to success, also in a BVP trajectory.

An important contradiction of the BVP method in this case was that the maximum price had been adjusted. According to the BVP philosophy, that should not have happened. Apart from the evaluation phase, the service definitions regularly stabilized, destabilized, and subsequently stabilized. Both parties were involved in a continuous dialogue in which the service definitions were discussed. Contractual and relational governance were balanced in this case. The findings with regard to the phenomena relational and contractual governance and the (in)stability of service definitions are not in conformity with what the BVP philosophy pretends. BVP is a form of Performance Based Contracting and this study shows that PBC alone does not work. Relational aspects such as trust, flexibility, solidarity, and dialogue must also be present to make a procurement project into a success.

5.2 Discussion

This study provides insight into the application of the BVP procurement method as specific form of PBC in complex procurement trajectories. Kleemann and Essig (2013) have conducted research into the improvement of procurement results in complex trajectories. Their study describes the Performance Based Contracting (PBC). It is a procurement method that aims for results and...
outcome. BVP is a procurement method that aims for results. The present study shows how a complex project is procured by means of the BVP procurement method. The phenomena complexity, (in)stability of service definitions, and contractual and relational governance are described in light of BVP. A central question in this study is whether BVP realizes all expectations it pretends. The present study builds on studies by Selviaridis (Selviaridis et al., 2011), Gelderman (Gelderman et al., 2015) and Caniëls (Caniëls, Gelderman and Vermeulen, 2012).

Theoretical expectations
In literature, the most important characteristics and principles of the BVP procurement method are described. BVP is a way of procuring in which the order is drafted in a more functional manner and is not muddled with a huge amount of detail specifications. The offering party is free to give its own interpretation to the order, if the functional specifications are met. The client indicates what it wants, and the contractor determines how it will be delivered. “In the pre-award phase, client and contractor take the time to coordinate what they expect from each other, they plan the project, and they make agreements on the control of risks and the utilization of opportunities.” The contractor must minimize risks and be accountable for risks, but must also dare to take risks if innovative work is necessary. Maximize opportunities and act in the interest of the client, focus on the end result for the client, and signal problems as early as possible. According to Kashiwagi (2011), BVP is a good procurement method to cope with complexity.

The implicit promises of BVP are:
- There is room for innovative solutions.
- There are no high expenses for additional work and the maximum price is fixed.
- The contractor works out the order himself (design and construction and possible maintenance); this gives the contractor room for creativity.
- The contractor is accountable for the risks. The contractor will ‘automatically’ think along with the client. The consequences of ambiguity and uncertainties, problems, and delays are eventually to be paid by the contractor itself.
- Contractors do not have to spend as much time on the procurement process because detail specification is not necessary.
- The client can let go of the contents and trust the contractor; less hours of testing in terms of content (the details), but rather monitoring the delivered performance.
- Because there is more room for the contractor, various approaches are possible and the client can select the contractor on the basis of quality for the price.
- Minimization of communication, transactions, and decision making.

Empirical observation
The empirical observations from the present study contradict that which BVP pretends. The propositions have been drawn up in light of what the BVP method pretends. Table 4.4 indicates to what extent the propositions are supported by the research results. Four out of the six propositions are not supported. The other two are only partly supported. P1 and P2 are not supported at all. The research results do not show that all risks were identified because undesired events have occurred during the execution of the project. The undesired events have also led to additional work and expenses. The contractor has also indicated that it is in fact impossible to control all risks. The maximum price has also not been maintained, which is contrary to what BVP pretends. P3 is partly supported. The original offer is not altered in general terms, because it is described in general terms. In the concretization phase, a lot of alterations occurred on detail level where matters were added or changed. There is definitely negotiation on the specifications. Furthermore, additional wishes were added. P4 is also not supported, as the constant dialogue between buyer and...
supplier in this complex project created dynamics in the service definitions. P5 is also not supported. After the contract was taken out, the dialogue between buyer and supplier continued and alterations were made. Adjustment was certainly not a one-way street, but occurred by mutual consultation, and the decision making also occurred jointly. The last proposition, P6, is partly supported. Contractual and relational governance were balanced in this case. Contractual governance was not the main control mechanism. Relational norms and values also played a large role in the project management.

Because no proposition is fully supported or only partly supported, it has been shown in the present study that only output-orientation is impossible in complex procurement trajectories. Performance based contracting (PBC), which includes BVP, aims for output. The present study has demonstrated that, in order to cope with complexity, a constant dialogue between buyer and supplier is necessary. The strict application of the BVP procurement method is not feasible. Relational norms such as flexibility, trust, solidarity, and shared norms and values, are necessary for the successful completion of a procurement project. The theoretical expectations of BVP are not fully realized. BVP has led to innovations, but success was achieved by means of other forces that occurred during this project. This is further elaborated on below.

During the conclusion of the interviews, the respondents were asked what their overall impression of the BVP method is. It is notable that the respondents ascribe the success of the project to the BVP method, while the results of all other questions point out that BVP is thought to be too rigid. The respondents indicate that BVP leads to innovative solutions and creativity of the contractor. This matches with the theoretical expectations of BVP. The contractor has provided an innovative solution and has delivered a properly working installation. This could have given rise to the bias of the respondents. The success is ascribed to BVP, because the method has led to innovation and because the experience they had with traditional procurement methods was negative. In traditional procurement methods, the client prescribes the solution in the smallest detail. Therefore, the failure of such projects is often ascribed to the client as they took the position of expert. The contractor is forced in a tight position and is unable to use all his knowledge and expertise. In traditional procurement method, the dialogue between the parties is absent, which creates noise. However, the success cannot be ascribed to the BVP method alone as the results of this study show. The respondents make a few contradictory statements that do not match the ascribing of the success to the BVP method.

Statements such as: it is not possible to merely aim for output, a constant dialogue is vital to the success of a project, relationship is just as important as contract, and not all risks can be identified. Particularly the latter can lead to the marking down of risks.

What is absent from traditional procurement methods is the dialogue between parties which may explain the failure in complex procurement projects. In this case, parties were engaged in a constant dialogue with each other and undesired events, additional wishes, and alterations were solved in consultation with each other. This was the key to success.

Moreover, the contractor was not the only party accountable for non-identified risks.

In case of complexity, dialogue between parties is a necessity, as this study also confirms, and that was the reason why the client has not strictly applied the principles and characteristics of BVP. A fighting relationship can be prevented by means of dialogue and relational norms and the parties have a common goal. The client has applied certain elements of BVP such as not prescribing the solutions to the problem.
5.3 Recommendations for business
The most important conclusions of the present study have been reported in section 5.1. The interaction between the governance mechanisms is seen as the key to a successful set-up and execution of complex procurement projects (Caniëls et al., 2012). Studies by Selviaridis et al. (2011) and Gelderman et al. (2015) have also demonstrated the link to the interaction between relational and contractual governance during the process of stabilization and destabilization of the service definitions.

BVP is not a good method for coping with complexity. A good relationship between buyer and supplier is a must for the successful completion of a project. Merely aiming for output is therefore unwise in complex procurement trajectories. A continuous dialogue between supplier and buyer creates understanding and removes noise between the parties. Matters such as shared norms and values, solidarity, flexibility, and trust belong to a complex procurement trajectory. However, there must be a balance and interaction between relational and contractual governance. It is a good thing that disputes and alterations are solved on the basis of relational governance, but too much trust can also lead to opportunistic behavior. Contractual control mechanisms function as an incentive. Nor is it a disadvantage that service definitions are under discussion. This provides interaction between buyer and supplier and leads to renewed insights that improve the quality of the service provision or the product to be delivered.

In this case, the BVP philosophy proved to be too rigid and is not feasible for complex procurement trajectories in practice. A focus on output alone leads to the supplier marking down risks and creates a fighting relationship between the parties. Certain components of the BVP method can be applied in complex procurement projects. The interviews with tenderers and the room offered to tenderers for ideas are good components with which tenderers are not limited in their creativity. However, there must be continuous dialogue and the governance mechanisms must be balanced.

5.4 Recommendations for Future Research
In the present study, a case was researched in which a project was procured by means of the BVP procurement method. The project aims to construct a CHP installation and to optimize the utilization of biogas. Characteristic of such projects is that the market may offer a variety of technical solutions. It is up to the buyer to choose the right and best solution. There is a great dynamic in innovations in the field of technology. The researched case is a case with a specific problem that has occurred only within the context of this Water Authority. The offered and applied solution has not been previously applied at a Water Authority. That influences the procurement trajectory and the interaction between buyer and supplier. It is recommended to study the BVP procurement method in cases with complexity, but that do not concern innovations. It is likely that the dynamics are different in such cases.

A number of limitations of the present study are discussed below. This case concerns a single case study and relies on the results of this single case. The question is how the phenomena of (in)stability and contractual and relational governance manifest themselves in a different environment. For instance, at other Water Authorities or government bodies such as municipalities, provinces, Rijkswaterstaat (Department of Waterways and Public Works), or the Rijksoverheid (Central Government). It is recommended to conduct research in these environments. The researched case took place at a Water Authority with an obligation to tender. Procurement of services, deliveries, and works are bound to the Procurement Act and the internal procurement policy. It is recommended to study cases in the private sector in which no Procurement Act applies and the buyer has more freedom to determine how a procurement procedure is performed.
Water Authority Vechtstromen, where this study was conducted, has a clear organizational structure. There is a procurement department that collaborates well with the internal clients. Knowledge of procurement and content-related material knowledge are combined well at Vechtstromen. This contributes to the professionalization of procurement and influences the procurement process. The results of research at other organizations could be dependent upon how the procurement process is organized. Furthermore, how suppliers are dealt with also influences the results. It is recommended to take the abovementioned aspects into account in other organizations, and which results it yields when the procurement process is organized differently. The validity of the research results rests on a proper and extensive procurement dossier and on seven respondents from entirely different disciplines who were involved in the procurement process. There was a lot of knowledge present as it concerned a procurement process in which they were intensively involved. The study focused on the BVP procurement method to cope with complexity. It is recommended to research how the phenomena manifest themselves in other procurement methods, for instance the competition-oriented dialogue. Additionally, it can be researched whether other procurement methods might also be used to cope with complexity. The Water Authority does not have a lot of experience with the application of the BVP procurement method. While conducting the research, it became clear that employees and contractors had to be briefed beforehand about the BVP method. It is recommended to conduct research in organizations that have extensive experience with the BVP method, such as Rijkswaterstaat.

The results of the present study can certainly not be generalized as it concerns a single case study. Further research could contribute to the generalizability. This study confirms the research results by Caniëls et al. (2012), Selviaridis et al. (2011) and Gelderman et al. (2015). The present research also showed that it is a good thing that the service definitions stabilized and destabilized, etc. The interaction between relational and contractual governance and the balance between these also played an important role in the management of the contract.

<table>
<thead>
<tr>
<th>BVP in theory</th>
<th>BVP as opposed to the theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor is the expert and makes sure the client makes as few decisions as possible</td>
<td>Buyer and contractor make decisions together in consensus.</td>
</tr>
<tr>
<td>As little communication as possible</td>
<td>Continuous dialogue</td>
</tr>
<tr>
<td>Using dominant information</td>
<td>Sharing information</td>
</tr>
<tr>
<td>Controlling risks</td>
<td>Discus risks</td>
</tr>
<tr>
<td>Thinking from we (win-win)</td>
<td>Shared values and goals.</td>
</tr>
<tr>
<td>Listening, observing and streamlining</td>
<td>Shared norms and improve together</td>
</tr>
</tbody>
</table>
References


Kashiwagi, D., 2011. Case Study: Best Value Procurement/Performance Information Procurement System Development. PBSRG 2011Journal for the Advancement 12 of Performance Information and Value VOL. 3 NO. 1


www.nevi.nl/bvp


Appendix 1: Design and Set-up of Interviews

The design and set-up of the interviews has been detailed in this appendix. At the beginning of the interview, the type of information sought is explained. The interview is organized on the basis of the BVP procurement process. The interview questions are subdivided into the phenomena relational and contractual governance and the (in)stability of service definitions and the BVP procurement process. Whether and when the phenomena have occurred is investigated. Additionally, the questions concern how the respondents have dealt with the phenomena. With regard to the BVP procurement process, the respondents are also asked whether the BVP philosophy actually yields the results it pretends to or whether the forces of the phenomena relational and contractual governance and the (in)stability of the service definitions also play a role.

**General interview structure**

**Phase 1**
Explaining the purpose of the interview, which information is sought, and what will be done with the results.

**Phase 2**
Aimed at the interviewee. Who is he/she, which position do they have, which role do they fulfill within the organization and the procurement process, what interest did they have in the results, and what are their authorizations. Obtaining information on the organization in which the respondent works.

**Phase 3**
Aimed at discovering why the BVP procurement process was chosen and what caused the trajectory to be complex.

**Phase 4**
Aimed at the BVP procurement process. Discovering whether all advantages are actually achieved.

**Phase 5**
Aimed at the phenomena relational and contractual governance, (in)stability of the service definitions, and the BVP procurement process. Explaining the phenomena.

**Phase 6**
Concluding the interview and asking whether the respondent has any relevant information that has not yet been discussed.

**Introduction**

1. Thanking the respondent for his/her time and cooperation.
2. Emphasizing anonymity.
3. Explaining the goal of the study, namely study of the experiences with BVP procurement method.

**A. General questions**

1. What type of company do you work?
2. What is the core business of your company/organization?
3. How many employees does your organization have? Could you give an indication of the turnover?
4. Which job position do you fulfill at your employer and what does this job position entail?
5. What was your role in the BVP trajectory optimization utilization biogas sewage treatment plant Emmen?
6. Did you contribute to the drawing up of the service definitions? If yes, what role did you play?
7. Which aspects of execution of the project proved to be successful or unsuccessful? To what extent did the BVP trajectory influence this in your opinion? Could you clarify this by means of examples?

B. The BVP procurement process
1. Could you clarify why the BVP method was chosen? What were the most important arguments?
2. Could you indicate what made the project complex? Could you give examples?
3. Is the BVP method a good method to cope with complexity? Why is it/is it not?
4. Has the BVP method led to more transparency, by taking responsibility, dominant information, and measuring performances?

C. Selection of supplier
1. To what extent did the client opt for the qualitatively best contractor?
2. To what extent can the contractor be considered proactive and innovative? Could you give examples of this in this project?
3. How did the client gather information and how was this used in the selection process? Did the client really gather as much information as possible?
4. According to the BVP method, all risks are identified beforehand so the client is not confronted with calamities and unforeseen situations at a later stage. Was that the case here? If yes, how did that occur? If not, which calamities/unforeseen situations have occurred? Please give examples and descriptions.
5. In principle, the client determines a maximum price that is not increased in the application of the BVP procurement method. How did this go in this project?

D. The (in)stability of service definitions
1. The stabilization and destabilization of specifications in a BVP trajectory occur because of the identification of risks by the contractor, not in consultation with the client. Was that the case in this project? Could you describe this?
2. In the concretization phase of the BVP procurement method, the original offer of the contractor is no longer altered. Was that the case in this project? Could you clarify?
3. In which phase or phases of the BVP procurement trajectory have the service definitions been altered?
4. Why were the service definitions altered and who called these into question?
5. Was there uncertainty with regard to the service definitions and could you clarify?
6. Did the service definitions stabilize as the BVP procurement process advanced?
7. If you consider the four phases of the BVP procurement method, have the service definitions remained unaltered from the start of the BVP trajectory?
8. Is it possible to keep the service definitions stable in a BVP procurement process? Why/why not?
9. Is the continuous dialogue an essential aspect for achieving good results in your opinion?
10. Were there limiting requirements in your opinion?

E. Contractual and relational governance
1. How did the contract arise? Was that drawn up by the contractor in conformity with the BVP philosophy or did the contract arise in consultation between the client and contractor? Could you describe this process?
2. In principle, specifications are fixed and are no longer altered after the contract has been entered into. If adjustments are needed, this is done by the contractor. The client is not
involved in this, only informed of it. Is that what happened in this project? Could you give examples of this?

3. Which formal measurable performance indicators have been established in the contract? How did these arise and was there uncertainty about the measurability?

4. Did the focus purely lie on formal performance indicators such as timely delivery, price, invoicing, etc.?

5. Have penalty clauses been included in the contract and were these eventually used?

6. To what extent was the contract seen as a sign of little trust between the client and contractor?

7. Did adjustment occur after the contract was taken out? If yes, how did this arise and how did the decision making take place?

8. Did factors such as uncertainty and capital lead to a market contract?

9. Did calamities occur after the contract was entered into? If yes, how were these reported and solved?

10. How did the control of the contract occur during the execution of the project? To what extent was there sufficient and adequate direction from the contract?

11. Relational norms can form an important basis for the collaboration and communication between client and contractor. To what extent were there shared values and norms in the field of (i) flexibility, (ii) solidarity, (iii) the exchange of information between clients and contractors, in your opinion?

12. To what extent was there trust between the client and the contractor? And did that trust play a role in the guidance of the contractor by the client? Could you give examples?

13. In your opinion, were matters such as solidarity and trust essential in contributing to a successful trajectory or would the successes also have been achieved if output had been the sole focus?

14. Guidance by the client is possible on the basis of the contract, but also on the basis of trust and shared values and norms. What was the most important method of guidance in this project? Could you clarify?

F. Conclusion interview

1. When you look back on your experiences with the BVP procurement method, what is your overall evaluation of the method? How practical is this method? Why and when does it work, when does it not? Which results were eventually achieved by the application of this method? In hindsight, would another contract form or tender method have been better?

2. Thank for cooperation and make possible further agreements.
## Appendix 2: Overview Interview Schedule

<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Function</th>
<th>Company/Organization</th>
<th>Role in this project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Brigitte Broekert</td>
<td>BB</td>
<td>Procurement advisor and process supervisor</td>
<td>Water Authority Vechtstromen</td>
<td>Tender manager and supervisor tender.</td>
</tr>
<tr>
<td>2. Gerrit Supheert</td>
<td>GS</td>
<td>Project leader Execution</td>
<td>Water Authority Vechtstromen</td>
<td>Content-related input during tender and project leader during.</td>
</tr>
<tr>
<td>3. Joost van Dijk</td>
<td>JD</td>
<td>Process executor Purification</td>
<td>Water Authority Vechtstromen</td>
<td>Input content-related knowledge on the project. Manager sewage treatment plant Emmen.</td>
</tr>
<tr>
<td>4. Vincent van der Linden</td>
<td>VL</td>
<td>Project leader</td>
<td>Water Authority Vechtstromen</td>
<td>Content-related project leader tender process.</td>
</tr>
<tr>
<td>5. Louis Jurjus</td>
<td>LJ</td>
<td>Advisory Engineer</td>
<td>Arcadis, no longer employed at Arcadis, but self-employed</td>
<td>Support tender process particularly order formulation, objectives, boundary conditions, UAV-gc (Uniform Administrative Conditions for integrated contracts), risk inventory, etc.</td>
</tr>
<tr>
<td>6. Barry Verduijn</td>
<td>BV</td>
<td>Project leader</td>
<td>SH+E (SH+E was taken over by another market party and is now called Êliquo Water &amp; Energy BV)</td>
<td>Executor of the service provider. Charged with writing offer and tender process. Supervisor design and realization process contractor.</td>
</tr>
<tr>
<td>7. Rick Langereis</td>
<td>RL</td>
<td>Director</td>
<td>SH+E (SH+E was taken over by another market party and is now called Êliquo Water &amp; Energy BV)</td>
<td>Project manager during the tender process and during the execution.</td>
</tr>
</tbody>
</table>
### Appendix 3: Overview Procurement Dossier per Phase of BVP Process

<table>
<thead>
<tr>
<th>Doc. No.</th>
<th>Document name</th>
<th>For analysis</th>
<th>Phase BVP procurement process</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Appendix A Tender ballot and tender document version 1.2</td>
<td>Y</td>
<td>Preparation</td>
</tr>
<tr>
<td>2</td>
<td>Appendix A Tender ballot and tender document version 1.3</td>
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<tr>
<td>3</td>
<td>Appendix B Basic agreement</td>
<td>Y</td>
<td>Preparation</td>
</tr>
<tr>
<td>4</td>
<td>Appendix C Own statement</td>
<td>N</td>
<td>Preparation</td>
</tr>
<tr>
<td>5</td>
<td>Appendix D Declaration director regarding illegality</td>
<td>N</td>
<td>Preparation</td>
</tr>
<tr>
<td>6</td>
<td>Appendix E Detailing of MEAT criteria</td>
<td>Y</td>
<td>Preparation</td>
</tr>
<tr>
<td>7</td>
<td>Appendix F Tender ballot and tender document</td>
<td>Y</td>
<td>Preparation</td>
</tr>
<tr>
<td>8</td>
<td>Appendix G1 Scope</td>
<td>Y</td>
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<tr>
<td>9</td>
<td>Appendix G2 Risk dossier</td>
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<td>10</td>
<td>Appendix G3 Opportunities dossier</td>
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<td>11</td>
<td>Appendix G4 Position profiles</td>
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</tr>
<tr>
<td>12</td>
<td>Appendix H Protocol individual exchange of information</td>
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<td>13</td>
<td>Appendix J Checklist</td>
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<td>Preparation</td>
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<tr>
<td>14</td>
<td>Appendix K Overview tender documents</td>
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<td>Preparation</td>
</tr>
<tr>
<td>15</td>
<td>Appendix L Acknowledgement of receipt</td>
<td>N</td>
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<tr>
<td>16</td>
<td>Presentation information meeting BVP</td>
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<tr>
<td>17</td>
<td>Report presentation information meeting</td>
<td>Y</td>
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<tr>
<td>18</td>
<td>Descriptive document optimization utilization biogas</td>
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<tr>
<td></td>
<td>sewage treatment plant Emmen</td>
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<td>Report pre-bid meeting January 3, 2013</td>
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<td>Preparation</td>
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<tr>
<td>20</td>
<td>Appendix 2 Design order sewage treatment plant</td>
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<td>21</td>
<td>Appendix 2A Folder process sewage treatment plant Emmen</td>
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<td>Appendix 3A Technical annual report 2011</td>
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<td>Preparation</td>
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<td>23</td>
<td>Appendix 3B Appendices Technical annual report 2011</td>
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<td>24</td>
<td>Appendix 3C Graphs technical annual report 2011</td>
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<tr>
<td>25</td>
<td>Appendix 4 Drawings gas engines sewage treatment plant Emmen</td>
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<td>Preparation</td>
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<tr>
<td>26</td>
<td>Appendix 5 Flow chart gas engines</td>
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<td>27</td>
<td>Appendix 6 Gas street scheme CHP</td>
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<td>Appendix 7 PIDs biogas line sewage treatment plant Emmen</td>
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<td>29</td>
<td>Appendix 8 Sludge company</td>
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<td>30</td>
<td>Appendix 9 Report usage</td>
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<td>31</td>
<td>Appendix 10 Energy efficiency plan</td>
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<td>Appendix 11 Report Evaluation heat mixers</td>
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<td>Appendix 12 Detailing of CHP scenarios sewage treatment plant Emmen</td>
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<td>Appendix A Descriptive document requirement specification</td>
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<tr>
<td>36</td>
<td>Information Notice 1</td>
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<td>37</td>
<td>Information Notice 2 Including maps, usage figures, gas composition, and reports.</td>
<td>Y</td>
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<td>Information Notice 3</td>
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<td>Report information meeting November 1, 2012</td>
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<td>Rejection Habo, Heijmans and Host</td>
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<td>Reasoning interviews</td>
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<td>Reasoning qualitative documents</td>
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<td>Evaluation questions risk and opportunities dossier</td>
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<tr>
<td>45</td>
<td>Final awarding to SH+E</td>
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<td>Evaluation</td>
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<td>46</td>
<td>Interview questions</td>
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<td>Evaluation</td>
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<td>47</td>
<td>Moving to pre-award SH+E</td>
<td>Y</td>
<td>Evaluation</td>
</tr>
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<td>48</td>
<td>Planning interviews</td>
<td>N</td>
<td>Evaluation</td>
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<td>Report interview Barry Verduin SH+E</td>
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<td>Evaluation</td>
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<td>Report interview Rick Langereis</td>
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<td>Basic agreement SH+E</td>
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<td>Concretization phase</td>
</tr>
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<td>Signed agreement</td>
<td>Y</td>
<td>Concretization phase</td>
</tr>
<tr>
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<td>Start meeting Pre-award</td>
<td>Y</td>
<td>Concretization phase</td>
</tr>
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<td>Action plan pre-award SH+E</td>
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</tr>
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<td>55</td>
<td>Report pre-award with SH+E</td>
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<td>Concretization phase</td>
</tr>
<tr>
<td>56</td>
<td>Summary weeklies (weeklies 1 to 21)</td>
<td>Y</td>
<td>Execution phase</td>
</tr>
<tr>
<td>57</td>
<td>Replacing main distributor</td>
<td>Y</td>
<td>Execution phase</td>
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<td>58</td>
<td>Evaluation tender 20130716</td>
<td>Y</td>
<td>Execution phase</td>
</tr>
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Clarification of table Appendix 2
The procurement dossier contains fifty-eight documents which have been subdivided per phase of the BVP process. These are documents that have gone through a certain development during the procurement process. The table contains an overview of all documents. For each document, it has been determined during which phase of the BVP procurement process the document was created. Additionally, it has been evaluated whether the document contains information on specific BVP characteristics, service definitions, and contractual and relational governance and therefore has meaning for the present study. The second column of the table indicates whether a document was selected for further investigation. The third column indicates during which phase the document was created.

The phases of the BVP procurement process deviate from the traditional procurement process. In the preparation phase of this BVP trajectory, the following activities have been performed:
1. The BVP method was first explained and presented to all those involved.
2. The scope and specifications have been drawn up.
3. The tender documents have been drawn up.
4. The tender has been published and the questions of tenderers have been answered.
5. Market parties have submitted their tender.
The activities in the evaluation phase were:
1. The qualitative evaluation of the offers.
2. The conducting of interviews.
3. The preliminary awarding and rejecting of other parties.

The activities in the concretization phase were:
1. The consultation between client and contractor regarding the further elaboration of the order.
2. The final awarding of the order to the contractor.
3. The drawing up of the contract and the signing of the contract by both parties.

The activities in the execution phase were:
1. Monitoring progress.
2. Adjusting in case of calamities and incorporating additional wishes into the execution.
3. Evaluating the tender.

The procurement dossier has a legal character because the client is a government and has an obligation to tender.
Appendix 4: Project Scheme and Scope

The previously mentioned project objectives and two critical principles have led to the following (summarized) scope as offered by SHE:

- A new CHP installation with a capacity of 500kW.
- A biogas pre-treatment installation for the necessary biogas conditioning for CHP and existing boiler.
- A smoke gas after-treatment installation for the new CHP to ensure this meets the BEMS (Decree on emission limit values for medium-sized combustion installations).
- An adjustment/renewal of the electro-technical installation with which the electrical energy generated by the CHP is reliably supplied to the company network of the sewage treatment plant Emmen.
- Detailing and implementation of a good heat regulation with which the sludge fermentation installation can be kept at the intended temperature by the new CHP and the existing (new) boiler.